ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

ASSESSMENT OF PROJECT MANAGEMENT PRACTICES: A CASE OF WATER WELL DRILLING ENTERPRISE

BY

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A Project work Submitted to Addis Ababa University College of Business and Economics School of Commerce in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Project Management (MAPM)

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DEPARTMENT OF PROJECT MANAGEMENT

This is to certify that this project work is prepared by Yibeltal Geto, entitled: "Assessment of Project Management Practices: a case of Water Well Drilling Enterprise" and submitted in partial fulfillment to the requirements for the degree of Masters of Arts in project management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved By the Examining Committee:

Advisor	**Signature**	**Date**
Internal Examiner	**Signature**	**Date**
External Examiner	**Signature**	**Date**

Statement of Declaration

I, Yibeltal Geto, declare that this project work entitled “Assessment of Project Management Practices: a case of Water Well Drilling Enterprise” is outcome of my own work and that all source of materials used for the study have been appreciably acknowledged. I have produced it with the guidance and suggestion of my research advisor. This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of Masters of Art in Project Management.

By: YIBELTAL GETO

Signature _____

Date: _____

Statement of Certification

This is to certify that Yibeltal Geto has carried out this project work entitled: “Assessment of Project Management Practices: a case of Water Well Drilling” under my supervision. This work is original and it is sufficient for submission as the partial fulfillment for the award degree in Masters of art in project management.

Advisor	**Signature**	**Date**

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Table of Contents

LIST OF TABLES

LIST OF FIGURES

ABBREVIATION AND ACRONYMS

AAU	Addis Ababa University
WWDE	Water Well Drilling Enterprise
AWWCE	Amhara Water works construction Enterprise
APM	Association for Project Management
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institution
IPMA	International Project Management Association
PM	Project Management
WB	World Bank
WBS	Work Breakdown Structure
SPSS	Statistical Package For the Social Sciences

ABSTRACT

Application of best project management practices is of critical importance for organizational performance. It is gradually becoming an important issue in developing economies, especially in a country like Ethiopia where projects of different size and structures are undertaken; Project management provides a framework to help accomplish goals, reduce operational costs and ensure timely delivery of projects. Hence, the purpose of this study is to assess the project management practices of Water well Drilling Enterprise using the five process groups defined by PMI (PMBOK). The research used a mixed approach and adopted a descriptive research design. The primary data collection was done by using an interview and questionnaire instruments. The analysis is done qualitatively by relating the results with literatures and quantitatively using percentage, frequency and mean and for the mean value the researcher adopted previous literature style in order to categorize the mean value. Accordingly, the findings of the research revealed a moderate level of project management practice within the case public organization. The study also revealed that the levels of initiation practice has been practiced in a better way among the process groups in the organization, while the project monitoring and controlling process group has the lowest practice level. Furthermore, the study identified that the level of practice of activities related to risk, procurement, stakeholder communication, project control, cost, time and documentations are given little attention and found low. Thus, the study recommends that the organization should give more emphasis or considerable attention for processes related to project control, risk, procurement, communication, cost, time, documentation and dissemination of lessons learned during the implementation of each process groups in order to enhance the practice of project management in WWDE.

Key words: *Project management, Project management Process groups, Project management practice, Water Well Drilling Enterprise.*

CHAPTER ONE

1. INTRODUCTION

1.1 Background Of the Study

Organizations are under increasing pressure from ever changing external environment, tough competition, information asymmetry and ever-changing customer demand, which demands constant innovation in products and services in order to obtain competitive advantage and meet the needs of customers. To win and remain in the competition and management's desire for efficiency and effectiveness, today's organizations adopt project management practices, which can be defined as the application of knowledge, skills, tools, and techniques to meet the requirements and objectives of the projects by implementing appropriate processes and methodologies, as part of their strategy and as a critical factor in the development of competitive advantages (Crawford, 2010). Project management is accomplished through the appropriate application and integration of the project management practices identified for the project. Project management practices can be effectively adapted from international standards and guidelines like project management institute (PMI).

The implementation of project management tools and techniques especially in developing countries is still in its early phases of development. The coexistence of several social, cultural, political, and financial problems in those developing countries results in poor management performance. Therefore, the strategy for implementing project management in developing countries must be consistent and aligned with the cultural characteristics of the particular society and configuration of its economic, political and administrative systems of that particular country (Bruck, 1987).

In Ethiopia, the drilling industry has a prominent role for the socioeconomic development of the country. In the history of the country's drilling sector, the first and oldest drilling public enterprise dates back to about 1975, having been established by IBRD and placed under Ethiopia's (then) Water Resources Commission. Whereas, the private drilling sector in Ethiopia is relatively young the first private drilling contractor started in 1991. There are currently about 40 organizations engaged in borehole drilling in Ethiopia. These include 20-

25 private contractors, 7-State Enterprises at Regional level, 3-State Enterprises at Federal level and 8-NGOs. The drilling sector has a decentralized structure that includes the following key players for the provision of water in rural and urban areas: Ministry of Water Resources (MoWR), the Regional Water Resources Bureaus (RWBs), the major Donors, the State Enterprises, the Private Sector (subdivided into indigenous and foreign), and NGOs.
Ministry of Water Resources, (MoWR) has the function of a service provider; setting sector policy and strategies, channeling funding and providing guidance to the regions, and regulating the private sector. The Regional Water Resources Bureaus are the major implementers of water programs. They use donor and nationally generated funds to purchase contracted services, such as borehole drilling. State Enterprises, which are still the preferred service providers for the RWBs especially in emergency and resettlement programs, have evolved over the last 35-years and recently the drilling technology is trending towards deeper wells and capable of reaching 500m depths in some project areas. (RWSN, 2006).

In view of the MDGs Ethiopia's drilling sector is characterized by significantly increasing financial support for funds from world Rural Water supply and sanitation (RWSS) programs which are financed by (World Bank, African Development Bank, European Union etc.). A large part of the capital investment by these programs will be spent on groundwater development through the joint management of the Ministry of Water Resources (MoWR), Ministry of Finance and Economic Development (MoFED) and other partner agencies in the country. (Carter et al, 2006)

In his case study Getachew revealed the following common obstacles and industry challenges to Ethiopia's borehole drilling industry: limited road infrastructure, difficulty of obtaining spares for drilling machines, extremely diverse natural environment (geology, physiography and climate) of the country, limited hydrogeological knowledge of the country, lack of clustering of contracts for drilling, and delays in budget releases which limit drilling activity to the period January to June, lack of experience and training opportunities in borehole site selection, poor planning and management, inadequate technical performance, technological defects (using poor drilling equipment) in drilling. (Getachew, 2004). As a result, only 44% of the total population had access to safe drinking water, which was much lower than the 61% average of other sub-Saharan African countries (UNICEF:

2010). In order to improve this situation and to achieve the Millennium Development Goals (MDG), the government has been working with donor agencies by implementing various water resources development and water supply projects. Another study by Lemma also revealed that, 79.06% of projects implemented in Ethiopia had failed to meet their objectives (Lemma, 2014). Hence to minimize and solve this problem, (Hailu, 2016) recommended in his study that adequate and in-depth studies must be done to evaluate the effectiveness of project management process especially in large organizations responsible for public projects. Likewise, Water Well Drilling Enterprise (WWDE) is one of the public enterprises which has been independently established in 2012, having grown out of the long-established parent enterprise, Amhara Water Works Construction Enterprise (AWWCE) (1988), in accordance with the licensing proclamation no. 198/2012 of the Council of Amhara national regional state to provide professional services in the drilling & construction of water well projects.

The main objective of this project oriented public enterprise (WWDE), is to provide water well drilling services in the region and at national level through its main office in Bahirdar town, a branch office in Kombolcha town and a project coordination office in Addis Ababa. The main activities of the enterprise include the drilling and construction of deep and shallow water wells for domestic water supply, irrigation and industrial purposes, in addition conducting pumping test of water wells to determine sustainable flow rates, water quality analysis, well rehabilitation works, installation & system connection of submersible pumps and other activities related to ground water resource development.

WWDE has a vision to becoming one of the leading & competent water well drilling firm in East Africa by 2028, with a mission to provide the drilling and construction service of water wells efficiently and effectively in accordance with the national and international standards to ensure the utmost satisfaction of customers, to expand and maintain sets of knowledge, skills & expertise and the application of state-of-the-art-technologies to provide solutions to the challenges of the nations in the ground water resource development sector.
WWDE, values ethical and professional practices, the culture of teamwork and creativity, customer-focused quality service delivery, integrity and honesty, excellence, sustainability and intolerance to corruption (WWDE, Brochure, 2015).

WWDE is a steadily growing public drilling firm since its establishment; it has well equipped itself with the necessary manpower, machines and materials and always strives to expand and diversify its drilling services delivery in response to the growing demands of customers and contribute towards the economic and social development of the country. WWDE is currently regarded as one of the most organized and leading state drilling firm within Ethiopia's water resource development sector in terms of delivering wider drilling services within and outside the region including the capital, Addis Ababa.

To achieve its organizational objectives, WWDE has recently undertaken an overall organizational restructure after its establishment. The recent restructure of the organization revealed as, Chief executive officer of the Organization at the top, who is under the board of the regional government, under the CEO there are two deputy general managers each leading the technical units and the supporting units at the main office, a branch manager at the branch office, a project coordinator at Addis Ababa coordination office, different directorate directors, department heads, project team coordinators, project team leaders and different experts at the middle and the frontline levels. In water well drilling enterprise; the project management office is established at director level to undertake decisive roles in endeavor to attain maximum benefits from strategic projects. Such roles are overall planning, coordination, execution, resource management, controlling and monitoring of projects, in collaboration with the supporting directors and work units; facilitate trainings, communication with stakeholders, supervise and follow up the progress of projects with the intention of completing them within the stipulated time frame, scope and approved costs (Company annual report, June 2021). Therefore, the main goal of this paper is to assess and examine the project management practices of WWDE by using the five generally accepted project management process groups defined by the project management institute PMI (PMBOK) (from initiation phase, planning phase, the execution phase then to the controlling phase and finally to the closing phase.

1.2 Statement of the Problem

The meaning of project management can differ among different people. Quite often, people misunderstand the concept because they have ongoing projects within their company and

feel that they are using project management to control these activities. According to Kerzner (2009), undertaking project activities do not necessarily indicate the presence of project management practice in the organization. It is clear that unless there is a structured and scientific approach to the practice of management, organizations would find themselves adrift in the ocean called organizational development and hence would be unable to meet the myriad challenges that the modern era throws at them. Hence, the importance of project management to organizations cannot be emphasized more (Lipovetsky, Tishler, Dvir & Shenhar, 2002).

The water well drilling industry has a prominent role in providing socio-economic benefits to the nation. However, due to its complicated nature and related unknown risks, groundwater resource development activities are challenged with various problems right away from the planning to the implementation and closing stages.

The complexity of drilling operation commence with the inter-relatedness of its different sections such as drilling tools, drilling equipment supply, drilling services, human resources, research and knowledge, contracts, work-over and maintenance together with their mutual impact on each other. Undoubtedly, addressing such an industry requires an integrated system that is compatible with its complexities; in addition, solely a systematic program oriented view is able to manage its different parts in an integrated manner. Holistic integrated views in planning hand in hand with an analytical one in the precise executions of programs are among the essential requirements of this industry.

Water well drilling projects undertaken by WWDE, are initiated usually by the client organizations in the country (governmental, non-governmental or private). Based on a preliminary interview with the organization project coordinators, it is stated that the organization has a culture of conducting a thorough planning practice on projects before implementation, however, in spite of the encouraging planning practice, most drilling projects are still facing problems of cost overrun, schedule delay, scope change problems and performance (quality) deficiencies. These problems impose substantial effect on the performance of the enterprise and further on the country's plan to meet the Millennium Development Goals target for drinking water. In addition, in the water well drilling service

industry of the country, as far as the researcher knowledge is concerned, no research has been done on project management practices related to water well drilling projects, while previous researches focused on the practical problems of drilling and well completion activities in Ethiopia (Tesfaye Tessema and Elene Mulugeta, 2009) and a case study in water well drilling problems in Ethiopia (Abebe G.Hiwot, 1999) can only be mentioned.

As a result, the need to examine the project management practices of WWDE has been found both important and timely in order to fill the research gap in the drilling industry of the country. Accordingly, in order to fill the research gap, in this research it has been tried to assess the project management practices of WWDE under the five process groups as defined by the PMBOK and tried to show the gaps within the practice.

1.3. Research Questions

1.3.1. Main research question

What is the current project management practice in Water well drilling Enterprise?

1.3.2. Specific research questions

1. How project initiation is being practiced in Water well drilling Enterprise?
2. How project planning is being practiced in Water well drilling Enterprise?
3. How project execution is being practiced in Water well drilling Enterprise?
4. How project monitoring and controlling is being practiced in Water well drilling Enterprise?
5. How project closure is being practiced in Water well drilling Enterprise?

1.4. Objectives of the Study

1.4.1. General objective of the study

The main objective of this study is to assess the current project management practice of water well drilling and construction projects in Water Well Drilling Enterprise.

1.4.2. Specific objectives of the study

The study aims to address specifically the following objective:

1. To assess the project initiation practice in Water well drilling Enterprise
2. To examine the project planning practice in Water well drilling Enterprise
3. To evaluate the project execution practice in Water well drilling Enterprise

4. To evaluate the project monitoring and controlling practice in Water well drilling Enterprise

5. To review the project closure practice in Water well drilling Enterprise

1.5. Significance of the study

The result of this study is significantly important for WWDE particularly in benchmarking the current project management practices against sound best practices by identifying the strengths of current practices that could provide a competitive advantage and areas that may need improvement in order to enhance the effectiveness of projects. It is also hoped that the result of the study could also be used as a reference or a foundation for further researches, professionals and organizations of similar interest.

1.6. Scope of the study

This study investigates the project management practices used in all the three offices of WWDE, the study is mainly concerned with the assessment of project management practices with the intention to identify strengths as well as weaknesses that needs potential improvements in the current project management practices of WWDE. Although, there are many project management practices which determine project success; this research will focus only on assessing the project management practices through the generally accepted five process groups defined by the project management institute (PMI) and PMBOK. In addition, the participants of study are those employees of WWDE who are directly involved in the management of projects.

1.7. Limitations of the study

Regarding this title there is no literature and research publications related to the management practices in the water well drilling service industry of Ethiopia, so, adequate information is hardly available about my project tile. In addition, the research lacks an in-depth and detail analyses of secondary project documents due to time constraints. since descriptive study is adopted for the research methodology, the study determines only practices but not causes or reasons.

1.8. Organization of the study

This research work is organized into five chapters. The first chapter discusses the introduction, statement of the problem, the research questions & objectives of the study, significance of the study and the scope & limitation of the study. The second chapter is titled Literature review, It has its own introduction, theoretical discussion, literatures relevant to the study theoretical & empirical review and summary of literature review. The third chapter is the research methodology, this chapter, deals with the research design & approach; data types to be used, sources & the method of data collection. The fourth chapter discusses the data analysis and interpretation, the fifth and final chapter is comprised of four sections, which include a summary of findings, conclusions, recommendations and future studies.

CHAPTER TWO

2. Review of Related Literature

2.1. Introduction

This chapter deals the discussion on literature related to the issue under the study. It contains an overview of project, project management practices, and project management process groups. Besides, overview of the drilling industry, past empirical findings on the topic of the study, and related studies are also discussed in this section and concluded with a summary.

2.2. Theoretical Literature

2.2.1 Project Concept

The definition of a project has been the subject of considerable debate over the years among the practitioners of project management and the goal of developing a comprehensive definition of what a project is has remained elusive over the years (Cleland & Ireland, 2002; Crawford &Pollack, 2007). Many definitions had been given to project by different authors, due to the fact that project is a multidisciplinary word that has different meaning from different perspective and orientations. Engineers, Architects, Managers and so on, have their definitions coined out from their experiences as far as their professions are concerned. The term project is described in different ways in different research literatures. This is illustrated below:

Project according to Project Management Institute, PMI, (2013) is a temporary activity or endeavor undertaken purposely to create a unique output (product or service) within budget, time and standards. According to PMI (2008a) “A project is a temporary endeavor undertaken to create a unique product, service or result. The temporary nature of projects indicates a definite beginning and end. The end is reached when the project's objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists".

The International Organization for Standardization (ISO) defines project as a single process consisting of set of coordinated and controlled activities with pre-determined start and end, in order to accomplish a certain goal driven by the specific need, within the environment consistent of limited time, expenses and resources. (Nokes, Major et al., 2003; ISO)

The International Project Management Association (IPMA) defines project management as planning, organization, monitoring and control of all the project aspects, including the motivation of everyone involved to accomplish the project goal though a secure path, within the pre-arranged time, expense and performance criteria's (IPMA, 2006).

PMI defines project management as application of knowledge, skill, techniques to execute projects effectively and efficiently. Project management therefore represents as balance between the project goals, it is plan and resources available. One of the analyses of the typical project phase is: initializing, planning and designing, execution, monitoring and control, and finally the project closure (PMI, 2003).

A project has been defined as "a complex, non-routine, one-time effort limited by time, budget, resources, and performance specifications design to meet customer needs (Gray, & Larson, 2008).

According to (Wysocki, 2014) a project is defined as a sequence of unique, complex, and connected activities that have one goal or purpose and that must be completed by a specific time, within budget, and according to specification.

Project is described as a "value creation undertaking based on specifics, which is completed in a given or agreed timeframe and under constraints, including resources and external circumstances" (Ohara, 2005, p.15).

A project is a regarded as a business case that indicates the benefits and risks of the venture, demonstrating a unique set of deliverables, with a finite life-span, by using identified resources with identified responsibilities (Bradley, 2002).

The common themes in these definitions are:

- A project is unique in its output; it sets out to do something that has never been done before
- A project has a clear and defined objective
- A project uses resources and it has a defined parameter, specific time, cost and performance requirements.
- A project usually requires the involvement of several professionals and departments (Larson, 2011).
- Projects are temporary in nature and are carried out to manifest the organization's strategic objectives.

These temporary structures are playing a vital role in today's modern organizations and a growing interest is recorded in the significance of these temporary structures in organizations.

2.2.2. Project management

Project management is defined in different ways in the research literature; And most authors agree that project management is about achieving time, cost, and quality targets within the context of customer requirements by using project resources.

Some of these definitions are as follows: The term Project Management is referred to as the "application of knowledge, skills, tools, and techniques to project activities to meet the project requirements" (PMI 2013) within a specified period of time. When describing the functions of project management, reference is included to an objective or purpose, a time-frame, budget and resources as well as performance requirements (Larson & Gray 2011). The reference to these elements, that include scope, time, cost, quality, human resources, communications, risk, procurement and finally how to integrate these elements to manage the project describe the nine knowledge areas of the Project Management Body of Knowledge (PMI 2013). These knowledge areas provide a map to manage a project according to a five step process of initiating, executing, monitoring, controlling, and closing a project to deliver an outcome.

Cleland (2004) described project management as "an idea whose time has come - a distinct discipline to be applied to the management of ad hoc activities in organizations". The importance of adhering to project management methods and strategies reduces project risks, cut costs and improves success rates of projects. Project management is important for several reasons that include: Organizing chaos, managing risk, managing quality, managing integration and change, retaining and use of knowledge and finally learning from failure.

Since project management incorporates the classical management functions like planning, organizing, directing, and controlling; it is counted as the practice of planning, organizing, directing, and managing company resources for a relatively short objective that has been established to achieve specific goals and objectives. (Kerzner, 2011).

In today's fast-changing market environment, project management is no longer exceptional need management; rather it has become a standard way of doing business. Project management is distinguished by ways of restructuring and adapting special management

techniques, with the intention of getting improved control and utilization of existing resources. A project management methodology or technique is said to be successful when it achieves the project objectives within the constraints of time, cost, at the desired performance or technology level while utilizing the assigned resource effectively and efficiently and become accepted by the customer (Kerzner, 2011).

Nowadays, project management is one of the vital skill sets demanded by organizations around the world; Because according to PMI, 20 percent of the world's GDP, or more than $12 trillion, were exhausted on projects each year in the decade 2010-2020.

Various authors and practitioners of project management believed that, the absence of project management will not necessarily lead to project failure; however, its practice offers significant benefits than using other management techniques in managing projects. Some of these benefits are: identifying functional responsibilities, time constraints for scheduling, a methodology for trade-off analysis, early identification capabilities of problems, improved resource estimating and assigning capability, to have a clear definition of projects, to define and manage scope and project related risks, to prepare schedules and budgets, to gather all the possible requirements, to structure the work needed to be accomplished, to monitor and control the activities, to manage stakeholders etc. However, those listed benefits cannot be achieved without overcoming its associated challenges and obstacles like project complexity, scope changes, project risks, and changes in technology, organizational restructuring and planning (Kerzner, 2011).

2.2.3. Project management practices

To standardize the generally accepted project management information and practices, PMI published the first PMBOK guide in 1987. The PMBOK Guide was edited for the 4th time in 2008 and it is now one of the most widely used standards in project management. The Guide is also an internationally recognized standard that provides the fundamentals of project management as they apply to a wide range of projects. (Liviu et al, 2010).

The Project Management Body of Knowledge (PMBOK) is a collection of processes and knowledge areas generally accepted as best practice within the project management discipline. It is an inclusive term that describes the sum of knowledge within the profession of project management. The full project management body of knowledge includes

knowledge of proven traditional practices that are generally accepted and widely applied, as well as knowledge of innovative and advanced practices that have seen more limited use, and includes both published and unpublished materials.

GENERALLY ACCEPTED knowledge and practices means that the knowledge and practices are applicable to most projects most of the time, and that there is also widespread consensus about their value and usefulness. However, Generally accepted does not mean that the knowledge and practices described are or should be applied uniformly on all projects; the project management team is always responsible for determining what is appropriate for any given project.

In project management, best practice is a general term that includes: guidelines and international standards. Both standards and guidelines are looking to improve project management, Best practice is based on experience and is used to describe the process of developing and following a standard way of doing things (Liviu et al., 2010).

Organizations using best project management practices have many advantages which include: transfer of knowledge, better communication, time and cost savings, better process quality, better position on the market, an international approach of labor, better monitoring and controlling of projects (Ilies, Crisan & Muresan, 2010).

PMBOK Guide, 5th edition describes Project management processes in terms of: Inputs; Tools and Techniques; and Outputs. The Guide recognizes 47 processes organized in five basic process groups and ten knowledge areas. The five process groups are: Initiating, Planning, Executing, Controlling and Monitoring, and Closing.

Although there are different indicated project management practices defined by different scholars, this study is benchmarking project management practices discussed in the PMBOK, guidance on project management, from the Project Management Institute (PMI, 2013). The PMBOK Guide includes the generally accepted knowledge and practices that applicable most of the time to most projects (which could apply to all subject areas).

2.2.4. Project management process groups

As identified by PMI (PMBOK), project management involves five process groups that any project requires. Process groups are simply groupings of processes by project phases (Robert, 2014). A process group includes project management processes that are linked together as the outcome of one process becomes the input in another. These five Process

Groups have explicit dependencies and are typically executed in each project and are highly interactive. These five Process Groups are independent of specific subject areas or industry focus. The Process Groups are not project phases, and in actuality, the five Process Groups could also be conducted within a phase. Projects are separated into distinct phases or subcomponents, such as concept development, feasibility study, design, prototype, build, or test. All of the Process Groups are typically repeated for each phase or subcomponent (PMI, 2013). The five process groups that are identified by the PMI are explained below:

- Project Initiating Process Group
- Project Planning Process Group
- Project Executing Process Group
- Project Monitoring and Controlling Process Group
- Project Closing Process Group

2.2.4.1. Project Initiating Process Group

The initiation of a new project is often done external to the project scope. The decision to start initiation is based on basic descriptions of the scope, deliverables, duration, and forecasts of resources required. This documentation is handled and further refined in the Initiation Process Group to facilitate the formal authorization to start a new project. When initiating a phase in a large, multiphase project, the processes are carried out to validate assumptions and decisions made in the original project charter (Gupta, Aha, Nau, & Munoz-Avila, 2008). The project charter is developed by the project organization, but approval and funding are handled externally. By reviewing the initiation process at the start of each new phase or sub-project, the project remains focused and start criteria is verified for each phase. The sub-project initiation processes also perform further validation and development of the project scope (PMI, 2017).

The key benefits of this Process Group are that only projects that are aligned with the organization's strategic objectives are authorized and that the business case, benefits, and stakeholders are considered from the start of the project. In some organizations, the project manager is involved in developing the business case and defining the benefits. In those organizations, the project manager generally helps write the project charter; in other organizations, the pre-project work is done by the project sponsor, project management office (PMO), portfolio steering committee, or other stakeholder group. This standard

assumes the project has been approved by the sponsor or other governing body and they have reviewed the business documents prior to authorizing the project.

In this process group, a particular need is identified and transformed into a structured issue to be solved. In this process group, the project's mission and purpose are defined, and the best strategies are identified and selected (Vargas, 2008).

The Initiating Process Group consists of those processes executed to define an original project or a new phase of an existing project by attaining permission to start the project or phase. According to the PMBOK, there are two essential processes identified under the initiating process group. The first process is developing a project charter. A project charter is a document that officially authorizes the existence of a project and allows the project manager to apply organizational resources to project activities. In this process, business documents, agreements, environmental factors and corporate process assets might be used as an input to develop the project charter. This process's significant benefits are that it provides a direct connection between the project and the strategic objectives of the organization, creates a formal record of the project, and proves the organizational commitment to the project (PMI, 2017).

The second process under the initiating process group is to identify stakeholders. This process identifies the Stakeholders who will interact and influence the overall outcome of the project. Identifying project stakeholders involves regularly analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success. To identify the stakeholders' different documents are used, such as project charter, business documents, project management plan, project documents, agreements, environmental factors and organizational process assets. The primary benefit of this process is that it enables the project team to identify the appropriate focus for engagement of each stakeholder or group of stakeholders (PMI, 2017).

Information from processes in the initiating process group is reexamined to determine if the information is still valid after all the activities under the initiating process group are done. In order to keep the project focused on the business need that it is undertaken to address, the initiating processes are revisited at the start of each phase. During this stage, the project charter, documents, and success criteria are verified. Also, the influence, drivers, expectations, and objectives of the project stakeholders are reviewed. During the initiation

phase, it is good to involve every group influenced by the project because involving the sponsors, customers, and other stakeholder's helps to create a shared understanding of success criteria. This also increases the likelihood of deliverable acceptance when the project is complete and consistent stakeholder satisfaction (PMI, 2017).

2.2.4.2. Project Planning Process Group

The main concern in the Planning Process Group is to develop and manage the project management plan. The planning processes include identifying, defining and managing all parts of the project management plan. These processes are continuously iterated as new information is discovered to keep the project management plan updated (PMI, 2017). An updated project management plan provides greater precision in the schedule, cost and resource requirements which increase the chances to meet the defined project scope. It is important that the project team involves stakeholders, who often have useful knowledge, in the project planning (Gupta, Aha, Nau, & Munoz-Avila, 2008).

During the planning process group everything that will be performed by the project is detailed, with schedules, interdependencies among activities, allocation of the resources involved, cost reviews, etc., so, at the end of this phase, the project will be adequately detailed to be executed without complexity and obstacles. In this phase, communication, quality, risk, procurement, and human resources plans are also developed (Vargas, 2008). The Planning Process Group includes all activities related to responding to two questions: "What will you do?" and "How will you do it?" as stated by (Robert, 2014).

Planning process group are processes necessary to create the scope of the project, improve the objectives, and define the course of action essential to achieve the goals that the project was undertaken to achieve. The processes in the Planning Process Group make up the parts of the project management plan and the documents applied to carry out the project. As discussed by the PMBOK, there are 24 processes in the planning process group (PMI, 2017). Below the different method will be discussed.

The first and most important process is developing the project management plan. It is the process of defining, preparing, and organizing the entire plan components and consolidating them into an integrated project management plan. The purpose of this process is the production of a complete document that defines the foundation of all project work and how

it will be performed. This process is carried out at predefined points in the project or once. The planning process group contains eight processes for preparing project plans for different components of the project. These plan documents are scope management plan, schedule management plan, cost management plan, quality management plan, communication management plan, risk management plan, procurement management plan and stakeholder management plan. The processes for developing these plan documents help for providing guidance and direction on how the different components of the project will be managed throughout the project (PMI, 2017).

In this process group, we define all of the work of the project by using three processes namely: define the scope, collect requirement and create work breakdown structure (WBS) (Robert, 2014). Collect Requirements is the process of unearthing, documenting, and managing stakeholder requirements and desires to meet objectives. It is used to provide the basis for defining the product scope and project scope. Define scope is another process; it is the process of developing a detailed description of the project and product. The purpose of this process is that it explains the product, service, or result margins and acceptance criteria. Creating a WBS (Work Breakdown Structure) is the process of subdividing project outputs and project work into small, more convenient components and this process presents a framework of what must be delivered (PMI, 2017).

During this stage, the activities of the project are defined and sequenced and how long it will take to complete the work is estimated, and next to the initial project schedule is developed (Robert, 2014). Define Activities is the method of identifying and documenting particular actions to be performed to create the project deliverables. The purpose of this process is that it provides a foundation for estimating, scheduling, executing, monitoring, and controlling the project work by decomposing work packages into schedule activities. Sequence Activities process identifies and documents the relationships among the project activities. The primary benefit of this process is that it defines the logical sequence of work to obtain the highest efficiency given all project constraints. Next, we approximate (estimate) activity durations, it is the process of estimating the number of work periods required to complete individual activities with estimated resources, and this helps to know the amount of time needed to complete each activity. After performing the above process, an initial project

schedule is developed. Developing schedule is the process of analyzing activity durations, sequences, schedule constraints, and resource requirements to produce a schedule model for project execution and monitoring and controlling. The significant benefit of this process is that it generates a schedule model with planned dates for completing project activities (PMI, 2017).

In the planning process group, the total cost of the work and the resources required to complete the work is estimated. To accomplish this estimating cost, determining budget and assessing activity resources processes must be carried out (Robert, 2014). Estimate Costs is the process of establishing an estimation of the monetary resources required to complete project work and aids to determine the necessary monetary resources for the project. Whereas determining a budget is the process of combining the estimated costs of individual activities or work packages to ascertain an authorized cost baseline and the purpose of this process is that it figures out the cost baseline contrary to which project performance can be monitored and controlled. The other activity is estimating activity resources; it is the process of determining team resources needed and the quantities and type of equipment, supplies, and materials essential to perform project work. This process key benefit is that it identifies the amount, characteristics, and kind of resources required to complete the project (PMI, 2017).

Also, in this process group, the potential individual and overall project risks are identified, and the identified risks are analyzed by using quantitative and qualitative risk analysis. After analyzing the risks, a risk response plan is generated by producing possible options, selecting strategies, and approving on actions to tackle overall project risk exposure also to take care of individual project risks (PMI, 2017). The planning process must seek input and encourage involvement from relevant stakeholders so that the demands and requests by stakeholders are addressed as early as possible in the planning processes. The importance of iterations in the Planning Process Group is based on that many risks often are more accessible to identify after most of the planning has been made. Depending on the characteristics of the new identified risks or opportunities, the project team might have to review the plan concerning cost, resources or schedule (Gupta, Aha, Nau, & Munoz-Avila, 2008).

Project planning is also linked with the theory since all internal and external issues should be considered in plan. Risk and opportunities should be considered and all depend on how the organization will look its environment. This is a matter of organizational planning and project planning on its activities and the degree to which the internal and external environment in an organization is supportive of any changes (Brammer & Walker, 2012). Project planning decides on how organization structure will relate with project implementation

2.2.4.3. Project Executing Process Group

The Executing Process Group is the processes where the work defined in the project management plan is executed. The process group involves coordination of resources and integration of the activities according to the project management plan (Walker, 2007). There is always a need for some re-planning in a project, due to variances in activity duration, productivity etc. These changes in planning should be analyzed and when needed trigger an update request in the project management plan. Analysis of these types of changes is conducted by the Monitoring and Controlling Process Group (PMI, 2013).

The executing stage is also called the launching Process Group; it includes all processes related to recruiting and organizing the team and establishing the team operating rules. These processes are preliminary for executing the project & also comprise all of the processes associated with getting the project work launched (Robert, 2014).

The executing process group includes those processes implemented to accomplish the work specified in the project plan to meet the project requirements. A large portion of the project budget, resources, and time are exhausted in performing the Executing Process Group processes. The significant benefit of this Process Group is that the work needed to meet the project requirements and objectives is performed according to plan (PMI, 2017).

This Process Group involves managing stakeholder engagement, coordinating resources, and integrating and performing the activities of the project in conformance with the project management plan. To accomplish these activities, the PMI has identified ten processes; these are:

- ✓ ***Direct and Manage Project Work***: is the process of leading and managing the work described in the project plan and applying approved changes to attain the project's goal.

- ✓ ***Manage Project Knowledge***: is the process of using existing knowledge and creating a new culture to realize the project's objectives and contribute to organizational learning.
- ✓ ***Manage Quality***: is the process of interpreting the quality management plan into implementable quality activities that integrate the organization's quality policies into the project.
- ✓ ***Acquire Resources***: is the process of acquiring facilities, materials, team members, supplies, equipment, and other resources required to complete the project work.
- ✓ ***Develop Team***: is the process of enhancing team member interaction, ability, competencies, and overall team environment to improve project performance.
- ✓ ***Manage Team:*** is the process of following team member performance, resolving issues, providing feedback, and managing team changes to optimize project performance.
- ✓ ***Manage Communications:*** is the process of ensuring appropriate and timely distribution, creation, collection, storage, monitoring, management, retrieval, and the ultimate dissemination of project information.
- ✓ ***Conduct Procurements:*** is the process of soliciting supplier responses, selecting a supplier, and awarding a contract.
- ✓ ***Manage Stakeholder Engagement***: is the process of working and communicating with stakeholders to fulfill their expectations and needs, address issues, and cultivate appropriate stakeholder involvement.
- ✓ ***Implement Risk Responses***: is the process of applying the planned risk response plans. It helps to address overall project risk exposure by ensuring that agreed-upon risk responses are executed as planned.

The processes in the executing process group may cause change requests. If approved, the change requests may trigger one or more planning processes that may result in a modified management plan, project documents, and possibly new baselines (PMI, 2017).

2.2.4.4. Project monitoring and controlling process group

The processes used to observe and control the project execution in order to identify potential problems, and take corrective action, are included in the Monitoring and Controlling Process Group (PMI, 2013). When the project's performance is observed and measured regularly,

differences against the project management plan is quickly identified. Identified problems or differences in the project are investigated and can result in an update of the project management plan. Through continuous monitoring, the project team gain insight into the whole project's progress and areas that require additional attention are highlighted (Guo-li, 2010).

This process group contains those processes needed to track, evaluate, and regulate the project's progress and performance. Besides, this process group helps to discover any parts of the plan in which change is desired and instigate the corresponding changes. When dealing with this process group, two concepts must be understood monitoring and controlling (evaluation) (PMI, 2017).

The vital question, "How will you know you did it?" and the processes linked to it are answered in the Monitoring and Controlling Process Group. The methods are establishing the reporting and monitoring system for measuring project performance, monitoring identified and new risks, processing scope change requests, reporting project status, and unearthing & solving problems encountered (Robert, 2014).

Based on PMBOK, twelve processes have been identified under the monitoring and controlling process group. These processes help measure and analyze the performance of the project at regular intervals to spot and correct variations from the project management plan. The first one is the monitor and control project work process, and this is a more extensive process that deals with reviewing, tracking, and reporting the overall progress of the project to attain the performance objectives presented in the project management plan. The benefit of this process is that it allows stakeholders to understand the current state of the project, to recognize the actions taken to address any performance issues and to have visibility into the future project condition with schedule and cost forecasts. The next process is performing integrated change control. The integrated change control process aids in allowing documented changes to be considered within the project in an integrated manner while simultaneously treating overall project risk. This usually occurs from changes made without consideration of the whole project plans or goals. The change control process reviews all change requests then manages changes and communicates the decisions. The other process is validating scope; it is the process of formalizing acceptance of the completed project deliverables (PMI, 2017).

The remaining processes under the monitoring and controlling process group can be classified into two, the control processes and the monitor processes. The control processes are control scope, control quality, control schedule, control cost, control procurement, and control resources. These processes deal in comparing actual performance with planned performance. These processes assess trends to influence process improvements, analyze variations, evaluate possible alternatives, and recommend appropriate corrective action as required. On the monitoring processes, there are monitor communication, monitor risks, and monitoring stakeholder engagements. The monitoring processes include activities such as generating performance measures, collecting project performance data, and reporting and disseminating performance information (PMI, 2017).

When the project's performance is observed and measured regularly, differences against the project management plan are quickly identified. Identified problems or gaps in the project are investigated and can update the project management plan. As stated by (Guo-li, 2010) by continuously monitoring the project team expands insight into the whole project's progress, and components that need additional attention are revealed. So monitoring and controlling should be done continuously within each Knowledge Area, each Process Group, each life cycle phase, and the project as a whole to be successful (Guo-li, 2010).

2.2.4.5. Project Closing Process Group

This process group includes officially accepting the project as complete, documenting the final performance and lessons learned, closing any contracts, and releasing the resources to work on other endeavors. It addresses the culmination of strong project management skills demonstrated throughout the other interrelated processes that guided the project. Good closure brings great reviews and can increase future word of mouth referrals (PMI, 2013). This Process Group confirms that the defined processes are accomplished within all of the Process Groups to close the project or period, as suitable, and formally ascertains that the project or a phase is complete. In this process group, the execution of work is evaluated through internal or external third parties auditing, the books and project documents are closed, and all the failures during the project are discussed and analyzed to prevent similar errors from occurring in future new projects (Vargas, 2008).

The question of "How well did you do?" and all processes related to the project's completion are answered in the closing process group. In this process group activities such as obtaining

client consent of matching project requirements, preparing and installing deliverables, administering the post-implementation audit, and writing the final project report are included. This Process Group may also address the early closure of the project if they are aborted or canceled (Robert, 2014).

2.3. Empirical literature review

This section contains reviewed literature that was relevant to this study. A detailed literature on the management practices of drilling projects in Ethiopia is difficult to find. Literature reviewed show that, there has been studies done to assess the project management practices of related projects. However, since this is new discipline not much has been done in terms of research in the area of project management practices.

A major study of project management practices at a global level was conducted by Price Water House Coopers in 2004 in which two hundred responses were gathered from a balanced group of companies from thirty different countries across the globe. Some of the relevant key findings for the study were as follows: That there was a positive correlation between project management practices and project performance. A higher project management level would most likely deliver superior performance in terms of overall project delivery and business benefits; that the current status of project management practices indicating that the current state of project management in organizations is at the level of informal processes; that many of the project failures are due to an imbalanced organizational structure, poor experiences in project life cycle management, poor utilization of project tools and techniques.

Atif, (2010) conducted a research entitled Investigating Project Management Practices in Public Sector Organizations of a Less Developed Country. The research identified the different types of constraints associated with the projects in a less developed country. These constraints are categorized by the theme of less developed country, public sector organization, culture and project management. This is done on purpose so as to distinguish between the issues which can be improved by taking an initiative at the organizational level and the issues which can only be improved by taking a major policy initiative at the political level. The researcher main findings were: Late approval of funds from the client side is an issue. This affects the project in a sense that to start the work on the project the project manager has to allocate funds to the contractor. In most of the projects the late release of

funds from the client side effects the project activities. There is no process of capturing the knowledge or experienced gained from the project. There is no lessons learned report or a meeting happens in the organization once the project is finished. No electronic data management system available in the organization to take help from the previous projects. There is no proper Project Management Office (PMO) in the organization. The decision power of the project manager is limited. The delegation of power to the middle managers is not happening in the organization. He concluded the above mentioned factors will have a direct impact on project management practices.

The study conducted by (Frezewed, 2016), tries to identify the practice of project risk management in Batu and Dukem Town water supply projects. The researcher has used descriptive research method. The data collection tools were interview and questionnaires. The findings of the study revealed that there is no policy or guideline that is designed on how to manage risks in the projects. A standard risk management process also does not exist within the projects. The outcome of the research confirmed that risk management practice is implemented to some extent but there is a gap between the theory of project risk management which should be applied and the actual practice that is performed by the two water supply projects.

A case study conducted by Bagayaad and Song on the project management practice in Groundwater Construction Project in Ghana, investigated the use of project management procedures and practice among the clients, consultants and contractors in groundwater construction projects in Ghana and presents the results of survey questionnaire conducted among personnel involved in the groundwater construction industry. The water industry is one sector that has played a major role in the economy of the country especially in the rural communities in Ghana; however the case study revealed that many projects have been implemented without good project management practices. Most of the groundwater construction projects had initiating processes but only few of key players involved in the process. Less than half of the respondents are involved in the processes. Most of the groundwater projects in the developing country are foreign aid sponsor, and the project initiating processes are done by the top management, planners and political leaders. This indicated that the key project teams are not playing a dominant role in the initiating process.

In his case study he has also revealed that, most of groundwater projects had contract close-out while more than half of the projects did not have administration closure. This indicated that most of the groundwater Project Managers did not verify and document projects results to formalize acceptance of the product of the project by the sponsor, client, or customer. This also revealed that most of the Project Mangers did not collect the project records; ensure that they reflect final specification, analysis of project success and effectiveness, and archiving such information for future use. Finally the researcher revealed in his conclusion that most of the problems in the groundwater construction projects are human and management problems.

Westhuijzen and Pelpola (1994), conference paper on Project management of borehole program stated that the Project Coordinator is responsible for coordinating and integrating activities across multiple, functional levels. Project management principles of plan, organize, lead and control, are therefore the ingredients that cement these operational islands into a continent of coordinated effort.

In summary, international and local studies have been reviewed. These studies focused on assessment of project management practices in light of one or two knowledge areas. All the studies reviewed did not examine the project management practice of water well drilling projects in Ethiopia in light of the five project management process groups which was the focus of this study.

2.4. Summary of Literature Review and Research Gap

The literature review provided a detail understanding and familiarity with the definitions and concepts of project, project management, and Practices of project management. The literature was reviewed and discussed with respect to the objective of the study that is assessment of project management practices in light of the five project management process groups which are: Project Initiation, Project Planning, Project Execution, Project Monitoring and Control, and Project Closing; what list of activities are addressed under each project management process groups which are required to ensure project success.

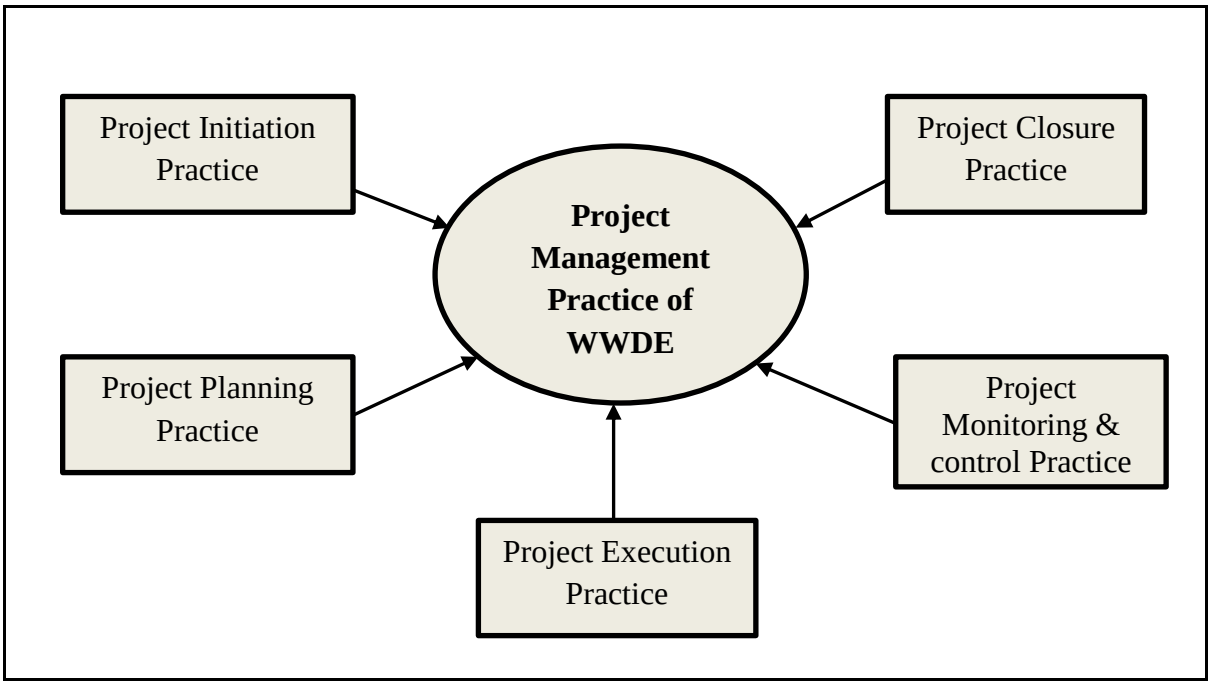
From the literature and empirical reviews; it can be concluded that, little has been done in developing countries like Ethiopia in evaluating project management practices of public and private project organizations whereby most of the projects fail to meet their planned targets. Moreover to the best of the researcher knowledge there is no previous work on assessing the

project management practice of WWDE. Therefore by assessing the project management practice of WWDE, this study will fill the literature gap of giving a more wholesome or general assessment of the organization's project management practice and giving us a new perspective by assessing the practice by classifying it into process groups rather than knowledge areas. The study will also lay a foundation to further understand implementation of project management processes in strategic public projects in Ethiopia.

2.5. Conceptual Framework

The study will assesses the project management practice of WWDE by using the five project management process groups defined by the PMI (PMBOK). The proposed framework for this research is illustrated in the figure below. It shows assessing the project management practices with the five project management process groups.

Figure 2.1 Conceptual Framework



Source: Prepared by the researcher, 2022

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

This chapter presents the research design and methodology that are adopted for the research. In this section the issues of research approach, design, data sources, data collection methods and instruments used in the study are discussed.

3.2. Research Approach and Design

3.2.1. Research Approach

Research approaches are plans and procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation (Creswell, 2014). According to Creswell (2014) there are three research approaches: (a) qualitative, (b) quantitative, and (c) mixed methods. Unquestionably, the three approaches are not as discrete as they first appear. Qualitative and quantitative approaches should not be viewed as rigid, distinct categories, polar opposites, or dichotomies. Instead, they represent different ends on a continuum. A study tends to be more qualitative than quantitative or vice versa. Mixed methods research resides in the middle of this continuum because it incorporates elements of both qualitative and quantitative approaches (Creswell, 2014).

Based on the above description, in this study the researcher has employed both qualitative and quantitative data (mixed) research approach. The rationale for using this approach is as stated by (Holme & Solvang, 1997); the qualitative method is used to gain a deeper understanding of the studied problem. While the quantitative techniques mostly consist of general conclusions and assessments, it also determines in which situations and for what units the conclusions drawn are valid. Additionally, the researcher used deductive approach, by referring different literatures, theories and models, which helped the researcher to develop conceptual framework and research questions. For the analysis of the practices of project management, the researcher used structured questioners and analyzed the data quantitatively. Additionally, Open-ended interview were used to collect qualitative data.

3.2.2. Research Design

In this study a descriptive type research design is used, which describes and portrays the characteristics of the project management practices within the organization (WWDE) accurately. Since, descriptive studies are concerned with describing the characteristics of a particular situation, individual or group.

The primary purpose is a description of the state of affairs as it exists at present, and they include surveys and fact-findings of different kinds. Descriptive studies are concerned with specific predictions, with the narration of facts and characteristics concerning the situation (Kothari, 2004).

3.3.3 The Population of the Study

Population is described as a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria and to which we intend to generalize the result of the research (Hair et al. 2010), This research is a case study of Water well drilling enterprise and the target population stated are comprised of those employees who are directly involved and affected by the project work. The research targeted those employees who are responsible for the planning, executing, controlling and supporting of the overall project implementation within the organization (WWDE).

For this thesis project, purposive sampling is used to pick the sample from. Purposive sampling is a widely used sampling method which allows a researcher to get information from a sample of the population that one thinks knows most about the subject matter. In this type of sampling, the choice of the sample items depends exclusively on the judgment of the investigator. Purposive sampling techniques include hand picking of the subject cases that the researcher thinks that possesses rich information to accomplish the researchers' objective (Lewis & Sheepard 2006). Hence the respondents that are included in this research are comprised of project managers, project coordinators, project team leaders, project team members, and project support staff within the organization.

The target population identified within the organization is found to be forty employees. For the study, census survey is used in order to meet the research objective and because of the size of the population. Also, by utilizing a census survey, the study allowed all the 40 participants to participate, which reduces the concern of accuracy, as stated by (Parker, 2011).

For the qualitative method the samples were selected purposely from the target population. Accordingly, individuals who have been working under water well drilling & pumping test directorate and have sufficient information about the project management practice of the organization were selected. Thus, the selected samples are assumed to have sufficient and relevant work experiences on the project management trend of the organization. Based on these criteria those at project coordinators and project directors' level are selected for the interview.

3.4. Data Type, Source and Method of data collection

Data can be gathered from both primary and secondary sources. According to (Hollensen, 2007) primary data can be defined as "information that is collected first-hand, generated by original research tailor-made to answer specific current research questions". And secondary data can be defined as "information that has already been collected for other purposes and thus is readily available". There are several methods of collecting primary data, particularly in surveys and descriptive researches. Important ones are: observation, interview, questionnaires, depth interviews, and content analysis (Kothari, 2004). Secondary data include both quantitative and qualitative data. Secondary data are usually collected from journals, existing reports, books, and statistics by government agencies and authorities (Saunders, et al., 2009). The study was conducted by collecting data from primary and secondary data sources. This was because of ease of interpretation of data and the need to address specific research issues in this case the project management practices. The primary data collection tools for this study were questionnaire and interview. The predetermined questions were fielded to employees involved in project work includes project directors, project coordinators, project team leaders, project team members, and project support staff within the organization. The questionnaire was used for data collection because, it offers considerable advantages in the administration: it presents an even stimulus potentially to large numbers of people simultaneously and provides the investigation with an easy accumulation of data. The questionnaire developed was given to the respondents to be filled and picked from their respective offices. The secondary data for this particular study was collected from company broacher own experience, company documents, project reports, articles, journals, researches and books as a secondary source of data. The data sources are

aimed to help understand the issue conceptually and identify a good model to assess the project management practices within WWDE.

3.4.1. Questionnaire

As stated by (Kothari, 2004), questionnaire is one of the most popular data collection methods. It consists of several questions in a definite order on a form or a set of forms. In the study, a questionnaire is used because as (Kothari, 2004) pointed out it is simple to administer and relatively inexpensive to analyze and also it is considered to be the most appropriate tool to reach the population of the study with limited time. Furthermore, the other characteristics of a questionnaire is that it is free from the bias of the interviewer because answers are in respondents own words and respondents have adequate time to give well thought out responses. Questionnaires are quite often regarded as the heart of a survey operation (Kothari, 2004).

Thus, to this study, the questionnaire was designed by benchmarking the five process groups defined by PMBOK and by adopting and modifying surveys from related researches to meet the aims and objectives of the study. Therefore, the questionnaires were prepared and distributed to target population which was mentioned previously and collected back. Thus, the questionnaire contains 51 questions in 3 categories. The first section was related to general background of respondents. The second section dealt with General project management issues. The third section dealt with Project Management Process Groups, to evaluate the effectiveness of project management practices in WWDE.

3.4.2. Response Rate

Among the total of forty questionnaires distributed within the organization, thirty four were adequately filled and returned. This shows there is an 85 % response rate which is assumed to be enough to do further analysis. Also, an interview was conducted both at project director and coordinators level within the organization, WWDE.

Table 3.1 Response Rate

Method of questionnaire distribution	Number of Distributed questionnaires	Number of Returned questionnaires	Response Rate (%)
Questionnaires hand delivered in hard copy	25	22	88
Questionnaires using online platform(Telegram)	15	12	80
Overall	**40**	**34**	**85**

Source: Field Survey, 2020

3.4.3. Direct Interviews

Interviews, as described by (Svenning, 2003), are useful tools to collect soft data and a semi-structured interview can, in general, be problem-oriented or problem-based. The objective of this method is to interview a few people around a given specific subject. This tool is characterized by the fact that the conversation flows freely, creating better access to comprehensive answers. Thus, primary data were also collected by administering a semi-structured interview with the project directors and coordinators level within the organization. The choice of respondents for this research was made based on their roles, expertise, and experience involved in project implementation process in order to get detail information and data about the project management practices within WWDE.

3.5 Methods of Data Analysis

The analysis of data is the process where one is trying to gather and present the data in such way that it has a good structure and becomes easy to understand (Artit, 2012). In addition, data analysis is a process of bringing order, structure and meaning to the mass of collected data. The goal with the analysis is to be able to come up with valid conclusions based on the empirical data. The analysis was anchored to the statement of the problem, research objective and research questions.

Thus, the data collected by the researcher first was processed by using processing operations of editing (the process of examining the collected raw data to detect errors, omissions & correct these when possible), coding, classification and tabulation.

The quantitative data collected was analyzed and summarized by using SPSS software version 20, descriptively using tables, means, bar charts, percentages and frequency.

The qualitative data collected were analyzed by using narrative analysis. The qualitative data is presented by transcription with logical and deductive narratives integrated with the descriptive findings to help understand those results. Finally, all the aggregated data were further discussed and then findings were presented to the reader in a readable format. After which conclusion was made and recommendations were delivered.

The study sought to assess the practices of project management process groups in WWDE. The responses were placed on the five Likert scale where 1= strongly disagree 2=disagree 3=neutral 4=agree 5 =strongly agree. One statistical approach for determining equivalence between groups is to use simple analyses of means and standard deviations for the variables of interest for each group in the study (Marczyk et al., 2005). The mean indicates to what extent the sample group averagely agrees or disagrees with the different statement. The lower the mean, the more the respondents disagree with the statement. The higher the mean, the more the respondents agree with the statement. On the other hand, standard deviation shows the variability of an observed response from a single sample. The mean values were presented in table. Mean values have been interpreted by adopting the criteria suggested by Mugenda (2003), Amin (2005) and Kelali (2018).

Table 3.2 Interpretation of mean range on likert scale

Response	Scale	Interpretation
Strongly disagree	1	Very Low
Disagree	2	Low
Not sure	3	Moderate
Agree	4	High
Strongly agree	5	Very High

Source: Adapted from Mugenda (2003), Amin (2005) and Kelali (2018)

3.6. Validity and Reliability

The validity of the research was secured by using different appropriate and proven methods in scientific research. First, the researcher used different data collection methods, and also the interview and survey questions were derived, and some adopted from the literature review with the consultation of the advisor. The data & research instrument used by the researcher was checked for unclear, obscure and ineffective questions by the advisor. Also, the effectiveness of the instrument towards addressing the objective of the research was

evaluated and approved by the advisor. The reliability of the research was secured by performing a statistical test by using SPSS version 20. The analysis resulted in an overall Cronbach alpha value of 0.954, which is generally considered acceptable, implying that the questions have high internal consistency. The scale reliability of the questionnaire instrument is presented in table 3.1 below. As shown in the table below the Cronbach alpha coefficient for the items under evaluation is greater than 0.7, therefore its reliability is statistically acceptable this implies that the data collected by the questionnaire can be used for further analysis.

Table 3.3 Scale Reliablity Result

Variables	**Cronbach's alpha coefficient**	**No of Items**	**Scale**
Project Initiation	0.761	3	1-5
Project Planning	0.906	13	1-5
Project Execution	0.878	9	1-5
Project Monitor & control	0.891	10	1-5
Project Closure	0.886	3	1-5
Overall Reliability	**0.954**	**38**	

Source: Field Survey, 2020

CHAPTER FOUR

4. DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1. Introduction

This chapter presents a comprehensive analysis & discussion of results acquired from the direct interview conducted and the questionnaire survey distributed among the staff members of WWDE. The obtained data were analyzed by using statistical package for social sciences (SPSS version 20) Software. Descriptive statistics such as mean, frequency, standard deviation and percentage were employed to describe the results. In addition, tables and bar graphs were used to present the data.

This chapter is classified into five sections: the first section discusses the demographic profile of the respondents; the second section presents the result for general project management issues within the case organization. The third portion displays the result and discussion for project management practices within WWDE. The last or fourth section assesses the project management practice in the organization and compares the research findings with other reviewed literatures.

4.2. Demographic Profile of the Respondents

In order to provide the demographic information and composition of the population under study, the respondents were asked about their gender, age, educational level, years of experience in the organization, position in the organization and if they had previous project management trainings or education, the responses to all these are summarized in the table below.

Table 4.1 Summary of demographic profile of respondents

			Position of respondents				**Total**
			Project coordinator	Project Manager	Project Member	Support staff	
Level of Education	Diploma	Count	0	0	0	1	1
		% of Total	0.0%	0.0%	0.0%	2.9%	2.9%
	BA/BSC	Count	2	11	2	2	17
		% of Total	5.9%	32.4%	5.9%	5.9%	50%

	MA/MSC	Count	8	1	1	6	16
		% of Total	23.5%	2.9%	2.9%	17.6%	47.1%
Total		Count	10	12	3	9	34
		% of Total	29.4%	35.3%	8.8%	26.5%	100.0 %
Year of experience	less than 5yr	Count	0	0	0	2	2
		% of Total	0.0%	0.0%	0.0%	5.9%	5.9%
	Between 5-10 years	Count	8	9	0	3	20
		% of Total	23.5%	26.5%	0.0%	8.8	58.8%
	Between 10-15 years	Count	4	3	2	2	11
		% of Total	11.8%	8.8%	5.9%	5.9%	32.4%
	Above 15 years	Count	0	0	0	1	1
		% of Total	0.0%	0.0%	0.0%	2.9%	2.9%
Total		Count	12	12	2	8	34
		% of Total	35.3%	35.3%	5.9%	23.5%	100%
Gender profile of respondents	Male	Count	12	11	3	4	30
		% of Total	35.3%	32.3%	8.8%	11.8%	88.2%
	Female	Count	0	0	2	2	4
		% of Total	0.0%	0.0%	5.9%	5.9%	11.8%
Total		Count	12	11	5	6	34
		% of Total	35.3%	32.3%	14.7%	17.6%	100%
Age profile of respondents	Less than 30 years	Count	0	1	0	1	2
		% of Total	0.0%	2.9%	0.0%	2.9%	5.9%
	31-40 years	Count	8	8	4	4	24
		% of Total	23.5%	23.5%	11.8%	11.8%	70.9
	41-50 years	Count	2	1	0	3	6
		% of Total	5.9%	2.9%	0.0%	8.8%	17.6%
	Above 50 years	Count	0	0	0	2	2
		% of Total	0.0%	0.0%	0.0%	5.9%	5.9%
Total		Count	10	10	4	10	34
		% of Total	29.4%	29.4%	11.8%	29.4%	100.0 %

Project Management trainings	Yes	Count	10	11	3	2	26
		% of Total	29.4%	32.3%	8.8%	5.9%	76.5
	No	Count	0	0	3	5	8
		% of Total	0.0%	0.0%	8.8%	14.7%	23.5%
Total		Count	10	11	6	7	34
		% of Total	29.4%	32.3%	17.6%	20.9%	100.0 %

Table 4.1 above presents the educational background, the work experience, occupational status, age, sex and access to project management trainings of the respondents who have participated in the study. As shown in the table, 47.1% of the respondents have master's (MA/MSc) degree education, and the other 50% have a bachelor's degree (BA/BSc) education and 2.9% have a diploma level of education.

From the table we can see that the majority of the respondents 58.8% have 5 to 10 years of experiences whereas 32.3% of the respondents have 11 to 15 years of experiences, and 5.9 % of the respondents have 3 to 5 years of experiences. The other 3% of the respondents have more than 15 years of experiences. The findings show that the majority of the respondents are well experienced in working in the organization and implying that they have a thorough understanding of the project management practice within the organization.

Concerning the gender profile of respondents as shown in the table above the survey included a higher percentage of male participants (88.2%) than female participants (11.8 %), this indicates that the gender distribution of the study is not proportional.

As it can be observed from the above table, the survey data collected from employees that are directly involved in project work. The majorities (41.2%) of the respondents are project managers, and the others are project members (23.5%), support (20.6%) and project coordinators (14.7%).

The result illustrates in the table that two respondents (5.9%) are below the age of 30, 24 respondents (70.6%) are between the age of 31 and 40, 6 respondents (17.6%) are between the age of 41 and 50 and 2 (5.9%) respondents are above the age of 50. As we can see from the result, a more mature audience is included in the field survey.

Moreover, the respondents were also asked if there is a project management training access within the organization, and 76.5% replied yes by further describing that they have attended once, monthly, semiannually or yearly. The responses show that the organization has an endeavor to apply project management practice within its organization by increasing its employee's capabilities towards project management.

4.3. Project Management Practices

4.3.1. General project management issues

General project management issue questions were raised to the respondents such as major challenges of the projects within the organization, project success rate within the organization from the employee's perspective, etc.

Table 4.2 General project management Issues

Project Management Issues		Frequency	Valid Percentage (%)
Is there a separate project management department in your organization?	Yes	20	58.8
	No	14	41.2
	Total	**34**	**100**

Source*: Field Survey, 2020*

Table 4.2 above shows results for general project management issues in the organization. Respondents were asked if there was a project management department in the organization, and 58.8% replied yes and the remaining no. From the interviews conducted, it was found that there is a project management department in the organization. The department oversees the implementation of project management practices within the organization and also seeks out improvements in the current project management practice being exercised within the organization. The result shows that majority of the respondents are aware that there is a project management office within the organization.

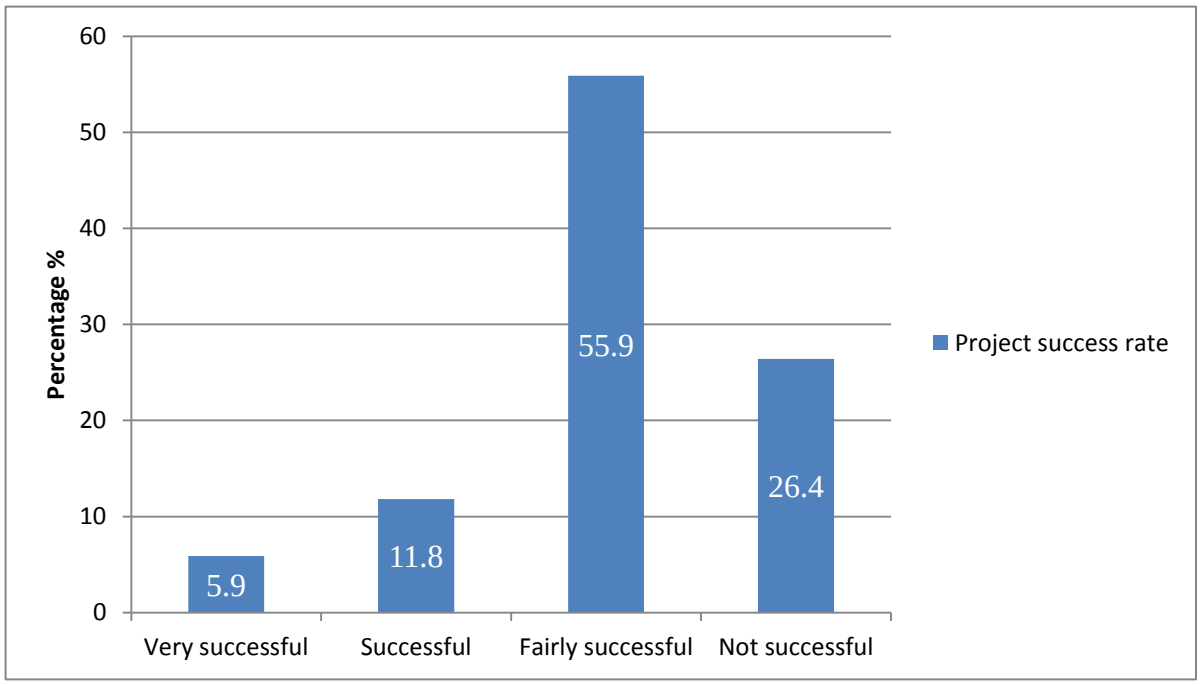
Table 4.3 Major project challenges in the organization

Major Challenges to the Projects in the Organization		**Frequency**	**Percentage (%)**
Internal	Lack of Clarity in the scope of the Project	13	13.8
	Time, Cost and Quality	15	16.0
	Resources	12	12.8
	Policies and Procedures	10	10.6
External	Organizational Culture	15	16.0
	Government	13	13.8
	Environment	16	17.0
	Total	**94**	**100**

Source: Field Survey, 2020

Table 4.3 above shows respondents multiple responses set regarding the major challenges of the projects within the organization. Majority of the respondents responded that the challenges mainly faced are internal issues, primarily time, cost, and quality and lack of clarity in the scope of the Project. From the external ones, issues of the environment and organizational culture have been identified as major challenges. The interview results indicate the same outcome as described above. According to the response given by project coordinators issues of time deviations range 200% to 300% and cost deviations range from 300% to 400%; in addition resource and environmental problems are identified as major challenges within the organization.

Figure 4.1 Respondents opinions on project success rate in relation to project management within the organization



Source: Field Survey, 2020

Figure 4.1above presents the perception of the respondents regarding the success rate of projects in relation to the project management trends within the organization (WWDE). According to the findings, 5.9% of the respondents believe projects within their organization are very successful; 11.8% of the respondents think it is successful. In comparison, 55.9% of the respondents assume it is fairly successful, and the remaining 26.4% of the respondents think it is not successful.

4.4. Project Management Process Groups

Following the profile identification and general project management issues, respondents were asked about their experiences in project management practices. Mainly to what extent the organization practiced the project management processes under each project management process groups. By using the Likert scale, respondents were asked to rate each parameter as follows: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, and 5-strongly agree. The respondent's responses were analyzed using mean scores together with standard deviations and percentages to assess the project management practices. The mean value

specifies the degree to which the sample group averagely agrees or disagrees with the statement. Accordingly, as the mean value is lower, the more respondents disagree, and as the mean value is higher, the more respondents agree. The interpretation of the mean percentage scores was adopted from (Ali, 2010), as shown in Table 4.7 below. It was adopted to describe the level of project management method, processes or processes groups being practiced.

Table 4.4 Interpretation of percentage Mean values

Range of Mean Values	Range of percentage Mean Values	Level of Project Management Practice
Less than 2.50	Less than 50%	Very Low
2.50 – 3.20	50 – 64%	Low
3.25 – 3.95	65 – 79%	Moderate
4.00 – 4.45	80 – 89%	High
4.50 – 5.00	90 – 100%	Very high

Source: (Ali, 2010)

4.4.1. Project Initiation Process group

The study wanted to find out the extent to which the project initiation process group was implemented in WWDE. The respondents were asked to indicate the extent to which they agree with the statement concerning project initiation. Accordingly, the results are presented in Table 4.5 below.

Table 4.5 Project Initiation Practice Result

Project Initiation Activities	Mean	Standard deviation
There was appropriate preparation of "Project Charter" which describes scope, objectives, time, budget, and risks.	4.44	0.504
Every stakeholders that affects the project is identified	4.12	0.769
Project team was appointed from the beginning & the roles of each team member were clearly defined and understood	4.03	0.758
Overall average value	**4.20**	

Source: Field Survey, 2020

Table 4.5 above shows that project initiation practices within the organization to be high with an overall mean of (4.2). All the processes presented under this processes group are rated at high level with appointing project team from the beginning & clearly defining the roles of each team member showing a slight decrease in mean value as compared to the preparation of project charter. The interview result indicates the same result with the survey where the respondents replied that the initiation process group is exercised at a higher level where the initiation documents are prepared, the stakeholders are identified, and also the project manager is assigned at this stage of the project. However, formal procedure might not be followed as a standard for the project management.

4.4.2. Project Planning Process group

The study sought to determine the degree to which project planning process group was applied in WWDE. The respondents were asked to specify the degree to which they can agree with the specified statement in relation to project planning. Hence the results are presented in Table 4.6 below.

Table 4.6 Project Planning Practice Result

Project Planning Activities	Mean	Std. deviation
There were preparations of detailed project plan that describe how to implement the project	3.82	0.936
The requirements needed for the project are collected and the scope of the project is defined thoroughly	3.91	0.900
All the activities of the project are defined and documented	3.76	0.955
By using the above defined activities a work breakdown structure (WBS) is created	3.56	1.078
A clear project organization is defined showing how the project will be organized	3.59	1.076
The resource needed for the project is estimated (the team resource, the bill of quantity is developed)	4.29	0.719
The project activities defined are sequenced, their activity duration is estimated and their schedule is developed & documented (by using critical path method or any other method)	3.32	1.249
The total cost needed to perform the project work is estimated and a project budget is developed that will help determine the cost baseline against which project performance can be monitored and controlled.	4.35	0.884
The risks that will affect the project are identified, then assessed and an appropriate risk response plan highlighting how to respond when	2.88	1.250

the risk occurs is prepared for the project		
The quality targets for the project are identified. The quality plan is developed to monitor the quality of the outputs and to identify actions that will be used to achieve the required quality.	3.53	1.187
The procurement plan is prepared appropriately and also a clear term of references is prepared for tendering documents.	3.85	1.209
There was appropriate preparation of communication plan for all related parties in the project.	3.21	1.321
A system was developed for collecting and distributing project information.	4.00	1.044
Overall average value	**3.70**	

Source: Field Survey, 2020

The result of the survey indicates that the overall score of the planning process group achieved a mean of (3.70) which indicates a moderate level of planning practice. This shows that some of the projects planning activities were recognized and defined however, may not be used in practice. From the table above the estimation of resource needed for the project, the development of total cost needed to perform the project work and the estimation of a project budget to determine the cost baseline and the development of a system for collecting and distributing project information in the planning phase are rated high with mean scores of each (4.29), (4.35) and (4.0) respectively. On the other hand, the identification of risks and preparation of its appropriate risk response plan to respond when the risk occurs in projects is rated at a low level with a mean value of (2.88).

In contrast, all the remaining planning activities listed are rated at a moderate level. The interview finding further affirms the above survey results. According to the interview responses, there is a good culture of planning practice within the organization to perform most of the processes under the planning process group; however, the critical planning activities like preparing risk plan, stakeholder communication plans are given little attention as compared to the other activities. As a result, since formal risk management plan was not instituted in WWDE. In addition, the researcher identified no document with risk & communication plan.

4.4.3. Project Execution Process group

The study wanted to find out the level to which project execution process group was executed in the organization, WWDE. By using Likert scale respondents were asked to rate

each parameter under the project execution as follows: 1. strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree. Thus the results are presented in Table 4.7 below

Table 4.7 Project Execution Practice Result

Project Execution Activities	Mean	Standard Deviation
The project work is directed and effectively managed according to the project management plan	3.12	1.250
There was effective communication between project stakeholder and project progress was reviewed frequently by the customer	3.68	1.147
The resources (project team, machine, materials) needed for the project are acquired and managed accordingly	4.03	1.000
Standards were set for the delivery of project outputs	3.68	1.224
Activities carried out by the project team were controlled and managed effectively	3.79	1.008
The risks encountered are dealt with and treated according to the risk response plan	3.09	1.240
There were mechanisms used to monitor quality during implementation (Quality assurance)	3.74	1.109
The procurement is conducted and effective management of the bidding process	4.21	0.729
There was a clear communication plan & communication channel between all the stakeholders	3.71	1.194
Overall average value	**3.67**	

Source: Field Survey, 2020

Table 4.7 shows that the project execution resulted in an overall mean of (3.67), which indicates a moderate project management practice level. The acquiring and management of project resources and the conducting procurement and effective management of the bidding process activities have a higher mean score than the other processes. The risk related activity in this process group is also rated low with a mean of 3.09, as compared to the other activities in this process group. While the other activities are all rated moderate, with managing project according to the project plan, setting standards for the delivery of project outputs and frequent review of effective communication between project stakeholder and project progress by the customer resulted in lower mean scores relative to the other activities in this process group.

From the interview conducted, it was founded that during the execution stage, the project manager has a directive role. The project manager is overseen by the project team coordinator and project directors in the decision making. This process group, as described by the respondents, is characterized by conflict between the project manager, team members and the coordinators, in addition it is affected by a number of different external factors.

4.4.4. Project Monitoring and Controlling Process group

The study required to find out the extent to which project Monitoring and controlling process group was implemented in WWDE. The respondents were asked to specify the extent to which they agree with the statement in relation to project monitoring and controlling. Therefore the results are presented in Table 4.8 below.

Table 4.8 Project Monitoring &controlling practice results

Project Monitoring & Controlling Activities	Mean	Standard Deviation
Monitoring and controlling the entire project work	3.79	1.038
There were effective management and integrated control of changes that arise during the implementation of the project	3.68	1.093
Controlling changes and also the scope so that the project is completed within the defined scope	4.21	0.845
Effective Control of the project resources	4.12	0.913
Effective controlling the project schedule so that it does not exceed the time constraint	3.21	1.298
Appropriate control of project costs so that it does not exceed the cost constraint	2.97	1.243
Monitoring for documented risk and new risks	2.79	1.122
Performing quality control so that it does not become below the stated quality targets	3.62	1.129
Administer the procurements according to the contracts	3.32	1.319
Monitor and control the communication	3.71	1.169
Overall average value	**3.54**	

Source: Field Survey, 2020

Table 4.8 above shows that project monitoring and controlling practice is rated at a moderate level, with a mean score of (3.54). Under this process group, Controlling changes to complete within the defined scope and effective Control of the project resources are rated a high level with mean scores (4.21) and (4.12) respectively. In contrast, monitoring for new

risks, control of project costs, control project schedule and administering procurements according to the contract are rated at a low level with mean scores of (2.79), (2.97), (3.21) & (3.32) respectively. Whereas, the remaining activities under this process group are rated at a moderate level. This shows that change and risk management usage in the implementation stage of the project were directly related to planning of change and risk which implies that poor project planning leads to poor project implementation.

The interview revealed different findings than the survey results. In the interview, the respondents responded that projects mainly struggle with a recognizable problem of scope creep, controlling changes, project schedule and cost. The changes are mostly related to design change which is due to either the need of the client or the replacement of the first consultant by the client. The schedule and time deviations are common in projects due to different underlying causes. Moreover, the interview result affirmed the survey with that there is a low level of risk monitoring practice and projects in the organization are continuously monitored and controlled. The project manager submits oral reports about the project status every three days to the respective team coordinators and to relevant stakeholders on time. Also, the project management office monitors the status of all the projects in the organization at least once every month by sending concerned professionals from its domains, and once every quarter year by sending selected members of the strategic management to the project location. The professionals evaluate the projects based on the checklist provided by the project management office. From the results, it can be seen that the organization has a better culture of monitoring practices than the controlling ones.

4.4.5. Project Closure Process group

The study sought to determine the degree to which project closure process group was practiced within the organization. Therefore, by using Likert scale respondents were asked to rate each parameter under the project process group as follows: 1. strongly disagree 2. Disagree 3. Neutral 4. Agree 5. Strongly agree. Accordingly the results are presented in Table 4.9 below.

Table 4.9 Project Closure practice Result

Project Closure Activities	Mean	Standard deviation
Evaluation of the project and determining the level of achievement of the objectives of the project and its success and lessons learned.	3.71	1.142
Proper dissemination of the lessons learned from the projects	3.26	1.238
There were documentation and archival of all documents for projects after their completion.	3.97	0.937
Overall average value	**3.65**	

Source: Field Survey, 2020

Table 4.9 specifies that the project closure process group, project management practice level is rated moderate, resulted in a mean value of (3.65). All activities under this process group are rated at a moderate level. Documentation and archival of documents for projects after their completion and evaluation of the project activity are evaluated at relatively high mean scores of (3.97) and (3.71) respectively, Whereas the dissemination & documentation of lessons learned process resulted in a relatively lower mean score of (3.26). The interview findings also affirmed that the organization suffers from documentation of lessons learned from the implementation process of various projects. They also added that absence of monitoring and evaluation department in WWDE, future projects leads to lose an important and valuable worth of lesson learnt from accomplished projects.

4.5. Assessing the Project Management Practices within WWDE

This study aimed to assess the actual project management practices of Water Well Drilling Enterprise. The research result has found the following major points. Generally, WWDE, Project management practice are found to be at moderate level in terms of the five project management process groups. The average mean value of the five process groups ranges between 3 and 4, only one process group that is project initiation process group scored above 3. The result indicates that the application of project management process groups exists in the organization, however standardizing at organizational level and sustainable implementation remains behind. Documentation exists only on some of the basic processes and management supports the implementation of project management, but there is

inconsistent understanding, involvement, no organizational mandate to comply with all projects. Functional management is involved in the project management of projects.

The findings from interviews also suggest that external problems such as the common involvement of three parties (consultants, clients & contractors) on drilling projects and the lack of common understanding influences the project management practice in the organization. As a result, this has negatively affected the application of project management within the WWDE.

CHAPTER FIVE

5. SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1. Introduction

In this chapter the summary of the major findings of the data analysis are presented. Based on the findings conclusions are drawn about the project management practice within WWDE.

The recommendations that can help to improve the project management practice within the organization are presented. Finally the suggestions for future studies are discussed.

5.2. Summary of Major Findings

The research aimed to assess the project management practice in Water Well drilling Enterprise. Based on the analysis of the results obtained, the major findings of the overall assessment of the practice within WWDE are summarized below.

- The total score of Project initiation process group achieved a mean of (4.2) which indicates a high level of initiation practice in the organization. The initiation practice within the organization is better than the practice of other process groups.
- The overall score of the planning process group achieved a mean of (3.70) which indicates a moderate level of planning practice in the organization. Furthermore, the result shows that many of the planning activities have an average practice level except for processes such as preparing risk, procurement and communication plan, which resulted in a low practice level.
- The result of the survey indicates that the overall score of execution process group achieved a mean of (3.67) which indicates a moderate level of execution practice in the organization. However, the findings also indicate low practices of risk and change management. Change and risk management usage in the implementation stage of the project were directly related to the change and risk plan in the planning stage.
- The total score of the project monitoring and controlling process group achieved a mean of (3.54) which indicates moderate level of monitoring and controlling practice in the organization. This process group has low implementation level compared to initiation, planning, execution and closure process groups. The reason for this is that

many of the monitoring activities are done well, but the control activities have poor implementation level. The result shows that control change, project schedule, risk and cost processes have low mean values. Therefore the finding agrees with that of (Karlsson, 2011) result that the project control is not prioritized within the organization.

- Regarding the total score of the project closure, it has achieved a mean of (3.65) which indicates moderate level of closure practice. This shows that project closure was not properly instituted and rarely practiced. The finding also indicates that most of the projects were not evaluated after closing as a result lesson learned couldn't be used for future projects.
- Generally, the result shows that Water Well Drilling Enterprise project management practice has a mean of (3.75) which indicates a moderate project management practice level on a defined scale. In addition, the process groups: initiation, planning, execution, closure and monitor & control are exercised in a descending level respectively.

The above list of findings shows that there is a gap of inadequacy between the project management practices in Water Well Drilling Enterprise and the best practices. This is mainly due to the absence of clear framework for implementation of projects.

5.3. Conclusion

The principal objective of the study was to assess the project management practice in WWDE based on the five process groups defined by PMBOK. The study used both quantitative and qualitative methods by obtaining data from the offices and project sites using a questionnaire and semi-structured interview and carrying out a comprehensive review of the relevant literature.

The assessment of the project management practice in WWDE revealed that the initiation processes are practiced at a higher level relative to the other process groups. In contrast, the planning, execution, monitor and control and project closure process groups are practiced at moderate or average levels. while the project monitoring and control process group has the lowest practice level.

The study also identified the gaps within the project management practice of WWDE. Thus, the level of application of activities related to risk, procurement, communication, cost, time

and documentations are poor and given little attention in the organization. Moreover, the level of practice of activities related to project control is inadequate, implying that project control is not prioritized within the organization.

Generally, the study discovered that the level of project management practice in WWDE in terms of performing the activities under each process group to be moderate except the initiation process group. In addition, the result of this research and information obtained from the literature reviewed showed that there is a gap within the project management practices of WWDE. So, to fill the gaps within the practice the researcher recommends that activities related to risk, procurement, communication, cost, time, documentation and dissemination of lessons learned at the closing phase of projects to be given considerable attention from the planning to the implementation phases of drilling projects within the organization.

5.4. Recommendations

In order to improve the project management practice within WWDE, the following recommendations are forwarded based on the findings:

- Precise project planning is a critical foundation for project success practice; planning and re-planning should be a way of life for project managers. Due to the dynamic nature of many projects, plans should be regularly reviewed in Water Well Drilling projects.
- WWDE needs to sensitize its employees to understand especially the need for project planning, execution, controlling and closure at all levels. The visible need of project management training that exists in the project offices need to be addressed to improve their project management knowledge & practice capacity
- As a public organization, WWDE should create a system to share and have common understanding between the parties involved in its projects to increase compliance between them while implementing project management practices.
- Project control must be prioritized by the organization and emphasis should be given to project control and related activities..

- Project activities related to risk, procurement, communication, cost, time, documentation and dissemination of lessons learned should be given more considerable attention during the implementation of each process groups within the organization.
- Project closing is also important component of project management. In WWDE, the project offices should plan for project closing that helps to know whether the project is completed, requirements are met, and business needs are fulfilled. Post evaluation should be applied, and lessons learned from project should be documented and disseminated to develop next projects.
- The project management office must ensure that the project management standard and practices are applied at all levels within the organization.
- Project changes mostly occur to project scope, deliverables, timescales or resource in drilling projects. These changes must be formally requested, evaluated & approved prior to implementation. The Project manager has to be empowered to responsibly manage those changes within his projects.

5.5. Suggestions for Future studies

While this research was able to offer additional insight into project management practices in WWDE, other perspectives could be explored by further research works. The researcher recommends future research to include different aspects of project management like knowledge areas. Besides, further studies could be done to search and solve gaps within the current project management standard and practice adopted by WWDE. Moreover, more extensive research can be conducted in detail by including various parties within the Ethiopian drilling industry to solve the project management problem of drilling projects.

In addition, since the practice of project management in Ethiopia is in its early ages, it is suggested that a wider research can be conducted in detail by including various project based organizations to compare their project management practice and contribute to its growth in Ethiopia.

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APPENDIX A:

Questionnaire and Interview

Addis Ababa University
College of Business and Economics
School of Commerce
Master of Project Management Program

Dear Respected Respondents:

This interview is conducted to collect data for a research on: Assessment of project management practices: A case of Water Well Drilling Enterprise (WWDE).The information is going to be used as a primary data for this research believing that your genuine responses will have a profound contribution to the quality of the findings of this study. The researcher would like to ask you to kindly complete this interview as honestly as possible. The responses you provide will be used only for the purpose of the study under consideration and will be kept strictly confidential. Kindly spare some time to the interview questions attached.

Thank you in advance for taking part in this endeavor.

Kind Regards

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Interview questions for Water Well Drilling Enterprise

1. Is there any project management practice or standard you have adopted in your organization?
2. Do you have a project management office in your organization?
3. How are the project success rates in your organization?
4. What is the planning process in your organization?
5. During project execution how do you manage and direct project work?
6. What are the major challenges you encounter while implementing projects?
7. How do you monitor and control the time, cost, scope and quality of your projects and how often do these constraints change compared to the planned values?
8. While closing a project do you document lesson learned & use them for planning other projects?
9. In your opinion in what areas of project management do your organization need to improve?

Addis Ababa University
College of Business and Economics
School of Commerce
Master of Project Management Program

Dear Respected directors, project coordinators, project managers and team members:

This questionnaire is being conducted to collect data for a research project as part of the requirements for my master's degree in project management at Addis Ababa university titled: Assessment of project management practices: A case of Water Well Drilling Enterprise (WWDE). The information is going to be used as a primary data for this research believing that your genuine responses will have a profound contribution to the quality of the findings of this study. The researcher would like to ask you to kindly complete this questionnaire, as honestly as possible. The responses you provide will be used only for the purpose of the study under consideration and will be kept strictly confidential. Kindly spare some time to fill out the questionnaire attached.

Thank you in advance for taking part in this endeavor.

Kind Regards

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Directions:

- ❖ No need of writing your name;
- ❖ Put either "X" mark or encircle your choice;
- ❖ If you cannot get any satisfying choice among the given alternatives, you can write your answer, in the space provided for the option;
- ❖ For the open ended items, give brief answer in the space provided.

Part I: Demographic characteristics and general background of the respondents

1. Sex:

1. Male ☐ 2. Female ☐

2. Age in Years:

1. Below 30 ☐ 2. 31-40 ☐ 3.41-50 ☐ 4. Above 50 ☐

3. Educational Level:

1. PHD ☐ 2.MA/MSc ☐ 3. BA/B ☐ 4.Dipl ☐ 5.High School ☐ completed

If other, please specify_____

4. Field of Specialization (The field you have studied) _____

5. Your Position in the organization (WWDE):

1. Project Coordinator ☐ 2.Project manager ☐

3. Project Member ☐ 4. Project support ☐

If other, please specify_____

6. Years of Experience in (WWDE):

1. 3-5 years ☐ 2. 5-10 years ☐ 3.11-15 years ☐ 4.More 15 years ☐

7. Have you ever had project management training or education?

1. Yes ☐ 2. No ☐

8. If your answer for Question number (7) is yes, what is the duration of the training or education? (In years)? _____

Part II. General Issues

1. Is there separate project management department in your organization?

1. Yes ☐ 2. No ☐

2. Which of the following do you think are major challenges to the Projects in your organization? (You can choose more than one)

Internal	**External**
☐ Lack of clarity in the scope of the project ☐ Time, cost and quality ☐ Resources ☐ Policies and procedures	☐ Organizational culture ☐ Government ☐ Environment

3. Is there a project management training access in the organization?

1. Yes ☐ 2. No ☐

4. If your answer on Question number (3) is yes, how often?

1. Monthly ☐ 2.Quarterl☐ 3.Semi-an☐y ☐4.Yearly ☐ 5.Once

5. What do you think is your company's project management practice in terms of project success?

1. Very successful ☐ 2. Successful ☐ 3.fairly Successful ☐.Not Successful ☐

Part III: Questions related to the five process groups of Project Management (Initiation, Planning, Execution, Monitor & Control and Closure) according to the PMBOK (guidance on project management)

Based on your experience of project management in your organization, please respond to what extents do you think the following factors listed under each project management process groups are being practiced in your organization.

According to the level of your agreement on the specified practices tick appropriately:

(5=Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1= Strongly Disagree)

S.N	***I. Project Initiation***	**5**	**4**	**3**	**2**	**1**
1	There was appropriate preparation of "Project Charter" which describes scope, objectives, time, budget, and risks.					
2	Every stakeholders that affects the project is identified					
3	Project team was appointed from the beginning & the roles of each team member were clearly defined and understood					
	II. Project Planning					
	Indicators	**5**	**4**	**3**	**2**	**1**
1	There were preparations of detailed project plan that describe how to implement the project					
2	The requirements needed for the project are collected and the scope of the project is defined thoroughly					
3	All the activities of the project are defined and documented					
4	By using the above defined activities a work breakdown structure (WBS) is created					
5	A clear project organization is defined showing how the project will be organized					
6	The resource needed for the project is estimated (the team resource, the bill of quantity is developed)					
7	The project activities defined are sequenced, their activity duration is estimated and their schedule is developed & documented (by using critical path method or any other method)					
8	The total cost needed to perform the project work is estimated and a project budget is developed that will help determine the cost baseline against which project performance can be monitored and controlled.					
9	The risks that will affect the project are identified, then assessed and an appropriate risk response plan highlighting how to respond when the risk occurs is prepared for the project					
	The quality targets for the project are identified. The quality plan is developed to monitor the quality of the					

10	outputs and to identify actions that will be used to achieve the required quality.					
11	The procurement plan is prepared appropriately and also a clear term of references is prepared for tendering documents.					
12	There was appropriate preparation of communication plan for all related parties in the project.					
13	A system was developed for collecting and distributing project information.					
	III. Project Execution					
	Indicators	**5**	**4**	**3**	**2**	**1**
1	The project work is directed and effectively managed according to the project management plan					
2	There was effective communication between project stakeholder and project progress was reviewed frequently by the customer					
3	The resources (project team, machine, materials) needed for the project are acquired and managed accordingly					
4	Standards were set for the delivery of project outputs					
5	Activities carried out by the project team were controlled and managed effectively					
6	The risks encountered are dealt with and treated according to the risk response plan					
7	There were mechanisms used to monitor quality during implementation (Quality assurance)					
8	The procurement is conducted and effective management of the bidding process					
9	There was a clear communication plan & communication channel between all the stakeholders					
	IV. Project Monitoring & Controlling					
	Indicators	**5**	**4**	**3**	**2**	**1**
1	Monitoring and controlling the entire project work					
2	There were effective management and integrated control of changes that arise during the implementation of the project					
3	Controlling changes and also the scope so that the project is completed within the defined scope					
4	Effective Control of the project resources					
5	Effective controlling the project schedule so that it does not exceed the time constraint					
6	Appropriate control of project costs so that it does not exceed the cost constraint					
7	Monitoring for documented risk and new risks					
8	Performing quality control so that it does not become below the stated quality targets					

9	Administer the procurements according to the contracts					
10	Monitor and control the communication					
	V. Project Closure					
	Indicator	**5**	**4**	**3**	**2**	**1**
1	Evaluation of the project and determining the level of achievement of the objectives of the project and its success and lessons learned.					
2	Proper dissemination of the lessons learned from the projects					
3	There were documentation and archival of all documents for projects after their completion.					

Adapted from Source: (Sajeda,2011, p.106)& (Abadir, 2011, p.220)