ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

ASSESSMENT OF PROJECT MANAGEMENT PRACTICES: A CASE OF ETHIOPIAN CONSTRUCTION DESIGN AND SUPERVISION WORKS CORPORATION

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This is to certify that this project work is prepared by Bisrat Zerihun, entitled: “Assessment of Project Management Practices: a case of Ethiopian Construction Design and Supervision Works Corporation” and submitted in partial fulfillment of 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.

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

Statement of Declaration

I, Bisrat Zerihun, declare that this project work entitled “Assessment of Project Management Practices: a case of Ethiopian Construction Design and Supervision Works Corporation” is outcome of my own effort and that all source of materials used for the study have been duly acknowledged. I have produced it independently except the guidance and suggestion of the research advisor. This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of Masters of Art in Project Management.

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Date: _____

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This is to certify that Bisrat Zerihun has carried out this project work entitled: “Assessment of Project Management Practices: a case of Ethiopian Construction Design and Supervision Works Corporation” under my supervision. This work is original in nature and it is sufficient for submission as the partial fulfillment for the award degree in Masters of art in project management.

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Advisor	**Signature**	**Date**

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Abstract

Application of best project management practices is of critical importance for organizational performance. Project management is believed as an effective and resourceful method for achieving a goal that is better than the other available methods, processes and techniques. Hence, this study aimed to assess the project management practice of Ethiopian Construction Design and Supervision Works Corporation 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. Percentages and mean values were used to analyze the data collected. Accordingly, the findings of the research showed a moderate level of project management practice within the organization. Also the study revealed that the levels of planning practice to be higher than the other process groups in the organization while the project closure process group has the lowest practice level. Furthermore, the study identified that the level of practice of activities related to risk, procurement, communication, project control, cost, time and documentations to be 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 lesson learned during the implementation of each process groups in order to strengthen the practice of project management in ECDSWC.

Key words: Project management, Project management Process groups, Project management practice, Ethiopian construction design and supervision works corporation

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Acronyms and Abbreviations

AAU	Addis Ababa University
ANSI	American National Standardization Institute
APM	Association for Project Management
CDSC	Construction Design Share Company
ECDSWC	Ethiopian Construction Design and Supervision Works Corporation
ICB	IPMA Competence Baseline
IPMA	International Project Management Association
ISO	International Organization of Standardization
PM	Project Management
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
PRINCE2	Project IN Controlled Environments
SPSS	Statistical Package for Social Sciences
TCDSC	Transport Construction Design Share Company
WBS	Work Breakdown Structure
WWDSE	Water Works Design and Supervision Enterprise

CHAPTER ONE
INTRODUCTION

1.1. Background of the study

The project management institute describes Project management as the use of knowledge, skills, tools and techniques to project activities to address the project requirements (PMI, 2017). Project management is described as the art and science of planning, designing and managing work all through the phases of the projects life cycle by (Abbasi & Al-Mharmah, 2000).

According to (Wideman, 1999) a project, to effectively meet its intended goals, needs to have certain practices. It is apparent that unless there is a structured and scientific approach to the practice of management, organizations would find themselves aimless in the ocean of organizational development and hence would be unable to meet the numerous challenges that the modern age throws at them. Thus, the importance of project management to organizations cannot be stressed more (Lipovetsky, Tishler, Dvir & Shenhar, 2002).

Project management is accomplished through the appropriate application and integration of the project management practices identifying for the project. Project management practice enables organizations to execute projects effectively and efficiently. Project management practices can be effectively adapted from international standards and guidelines like project management institute (PMI), ISO, ANSI & IPMA (Fraz, 2016).

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

Construction is a crucial sector for every society, economy and culture primarily for developing countries. Developing countries are mainly characterized by an enormous amount of infrastructure and construction throughout the country (Knoepfel, 1992). So to fulfil this

demand, there are several big private and public construction companies. Therefore ECDSWC (Ethiopian Construction and Supervision Works Corporation) is one of the organizations founded to fulfil the above demand. The construction industry in developing countries like other industries, as mentioned in the above paragraph, project management is in the early phases of development.

Recent studies on Ethiopian construction industry's project management practices illustrate that there are problems with the method and demonstrate that the project management to be unsatisfactory. Research by Hailu points out that significant numbers of projects in Ethiopia are under failed category because not much attention was given to effective project management processes like Planning, Time, Quality, Cost and Communication processes (Hailu, 2016). Another study by Ayalew identified that the construction industry in Ethiopia in terms of adopting project management practices is very unsatisfactory (Ayalew, 2016). Also, Yimama who studied Project Management Maturity in Ethiopia construction industry demonstrated that the processes maturity level is at an informal level and the maturity level in terms of practice is even at a basic level (Yimam, 2011).

In this paper, the project management practice of ECDSWC is investigated. The goal of this work is to examine the implementation of the project management practice from the initial initiation phase to the planning phase passing through scheduling of time, cost and resource then continuing to the execution phase next passing through the monitoring and controlling phase and ending with the closing phase.

1.2. Background of the company

Ethiopian construction design and supervision Works Corporation is a multi-disciplinary engineering corporation established by the merger of 3 companies: WWDSE (waterworks design and supervision enterprise), CDSC (Construction Design Share Company) and TCDSC (Transport Construction Design Share Company). The 3 companies worked in planning, design and supervision of water and hydropower, building and transport sector work from 1998, 1977 and 1987 respectively. The Ethiopian Construction Design and Supervision Works Corporation (ECDSWC) were founded on 17 Dec 2015 through the merger of the three companies to operate as a Federal Government Public Enterprise under the authority of the Ministry of Public

Enterprises (MoPE). The Corporation was established for an unlimited period with an authorized capital of Birr 1,301,515,785 (ECDSWC, 2017).

ECDSWC is a multi-disciplined engineering firm committed to providing professional services in Study, Design, Construction Supervision and Project Management. The Ethiopian Construction Design and Supervision Works Corporation (ECDSWC), is a fully integrated consultancy firm in water and energy, building and urban planning, transport sectors, geotechnics and underground works combined with a fully supported and organized advanced laboratory and research, surveying, geospatial and civil informatics services in search of excellence and quality. (Brochure, 2019)

The Enterprise strives for continual improvement in measures of performance such as time, quality and costs to enhance customer satisfaction through human resource development and project management capacity building. The Enterprise ensures that professional services comply with national guidelines, international standards and codes of practices by fulfilling the requirements of ISO 9001:2008 quality management system.

ECDSWC has a vision to becoming knowledge-based, dependable, innovative and world-class consulting firm by 2025 with a mission to provide Study, Design, Supervision and Contract Administration services in Water, Transport, Building and other related engineering works with efficient and effective certified services in accordance with national and international standards that ensure the utmost satisfaction of customers, to carry out Consultancy services with a goal of becoming cost leadership while achieving excellence in every aspect to meet customers' strict requirements concerning quality, punctual delivery, safety and environmental aspects, to expand and maintain sets of knowledge, skills and expertise and state-of-the-art-technologies to provide solutions to the challenges of the nation in the construction consultancy services, to play critical roles, in supporting the government's economic transformation endeavors by decreasing the huge market gaps in the infrastructure sector development. ECDSWC values ethical and professional practice, customer-focused, committed for quality, the culture of teamwork and creativity, Integrity and honesty, excellence and sustainability and intolerance to corruption (ECDSWC, 2017).

1.3. Statement of the Problem

Application of best project management practices is of critical importance for organizations operation. The project management practices are practical and a resourceful method for achieving a goal that is better than the other methods, process and techniques (Fraz, 2016).

The application of sound project management practices provides construction projects with the means to meet their objectives in terms of meeting the intended purpose the level of quality, time and cost while protecting the environment (King, 2015). Despite all best practices, predictability of project outcomes is still an issue of concern failure to achieve targeted time, budgeted cost and specified quality results in a various unexpected negative effect on the projects (Hailu, 2016).

But despite its prominent role, the construction industry in Ethiopia, like other developing countries, face many challenges in its ability to adapt and implement best practices (Mengesha, 2004). Moreover, according to (Ayalew, 2016) in Ethiopia, the level of construction project management practice in terms of adopting general project management procedures, functions, tools and techniques is unsatisfactory.

The main reason for project failure in developing countries, as stated by (Malan, 2007) is the lack of project management capability. Also, most of the construction projects in the country are not delivered successfully to the client (Fetene, 2008). Also, as mentioned by (Lemma, 2014), 79.06% of projects implemented in Ethiopia had failed to meet their objectives. As far as researches go to solve this problem, (Hailu, 2016) recommended that adequate studies must be done in evaluating the effectiveness of project management process of projects especially in large organizations responsible for public projects. ECDSWC is responsible for major megaprojects with strategic benefit to the nation so, problems with the project management practice will have a direct effect on the country's development.

Many of the projects undertaken by ECDSWC are initiated by other government organizations and mainly comprises of strategic and mega public projects. Also, it undertakes other projects provided by private organizations and in other African countries. Based on a preliminary interview the organization stated that it conducts a thorough planning practice on projects before implementation, but in spite of the good planning practice, they are still facing problems of cost overrun, schedule delay and significant scope changes. These problems are having a substantial

effect on the country's grand transformation plan because many of the projects undertaken by the organization are strategic megaprojects. In order to understand the root cause of the problem and recommend a solution the project management practice of the organization must be assessed, whether the problems originate in the initiation or planning or execution or monitor and control or project closure practice.

As a result, the need to examine the project management practice of ECDSWC has been found to be vital and timely in order to fill the research gap. Accordingly, in order to fill the research gap this research tries to assess the project management practice of ECDSWC under the five process groups as defined by the PMBOK and show the gaps within the practice.

1.4. Research Questions

1.4.1. Main research question

- What is the current project management practice in Ethiopian construction design and supervision Works Corporation?

1.4.2. Sub - research questions

1) How is project initiation being practiced in Ethiopian construction design and supervision Works Corporation?
2) How is project planning being practiced in Ethiopian construction design and supervision Works Corporation?
3) How is project execution being practiced in Ethiopian construction design and supervision Works Corporation?
4) How is project monitoring and controlling being practiced in Ethiopian construction design and supervision Works Corporation?
5) How is project closure being practiced in Ethiopian construction design and supervision Works Corporation?

1.5. Objectives of the Study

1.5.1. General objective of the study

The main objective of the study is to assess the project management practice in Ethiopian construction design and supervision Works Corporation.

1.5.2. Specific objectives of the study

The study aims to address specifically the following objectives:

1) To assess the project initiation practice in Ethiopian construction design and supervision Works Corporation.
2) To examine the project planning practice in Ethiopian construction design and supervision Works Corporation.
3) To evaluate the project execution practice in Ethiopian construction design and supervision Works Corporation.
4) To determine the project monitoring and controlling practice in Ethiopian construction design and supervision Works Corporation.
5) To review the project closing practice in Ethiopian construction design and supervision Works Corporation.

1.6. Significance of the study

This research will give an insight into the project management practices in Ethiopian construction design and supervision works corporation, which is responsible for a significant public project in the country. The result of the study will provide a lesson learned document for the organization which will help the management in the organization to make decisions to either improve the project management practice or to conduct further research to increase the project success in the organization. Also, the study could help as a reference for other governmental or non-governmental organization involved in the construction industry or not.

Moreover, the study will be a foundation for further researches on project management practice in the organization or other organizations, investigations on public projects in this country or other related studies concerning project management.

1.7. Scope of the study

This study investigated the project management method used in ECDSWC, water sector. It doesn't assess the practices of other areas of the corporation. The study is mainly concerned with the assessment of project management methods with the focus to identify strength and potential improvements in the current operations of ECDSWC. The research is only focused on assessing the project management practice through the generally accepted five process groups defined by the project management institute (PMI) and PMBOK. In addition, the study did not participate all the staff of the organization. Only information on project management is collected from personnel that are directly involved in projects.

1.8. Limitation of the study

This study lacks a direct observation of projects due to the remoteness of the project areas. Also, the research lacks a more in-depth, more number of secondary project document analyses due to the company policy. In addition, the research methodology of this study is descriptive. Thus, the study determines practices and not causes or reasons.

1.9. Organization of the study

The research work is organized into five chapters. The first chapter is the introduction, and it contains the background of the study, statement of the problem, fundamental research questions, objectives of the study, significance of the study, the scope of the study and limitation of the study. The second chapter is titled Literature review, and it deals with the literature relevant to the study. It has an introduction, theoretical discussion and empirical review. The third chapter is the research methodology, and under this chapter, it contains the research design & approach; data types used, sources & the method of data collection. The next section is Data presentation, analysis & interpretation. This chapter summarizes the results (findings) of the study and interprets the findings. The final or the fifth chapter is the Summary, Conclusion & recommendation. This chapter comprises four sections, which include a summary of findings, conclusions, limitations of the study and recommendations.

Chapter Two

Review of Related Literature

2.1. Introduction

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

2.2. Theoretical Literature

2.2.1. What is Project?

A project is a temporary and non-repetitive endeavor, characterized by a clear and logical sequence of events, with a beginning, middle, and end, focused on the accomplishment of a clear and defined objective on deadline, with costs, resources, and quality parameters specified (Vargas, 2008).

A project can also be defined as a one-off process undertaken with a single definable and unique product, service, or end-result. The temporary nature does not necessarily mean the duration of the project is short; it refers to the project's engagement and extended existence. The transient nature of projects shows that a project has a specific beginning and end. The end is reached when the project's objectives have been attained or when the project is terminated because its objectives will not or couldn't be attained, or when the project is no longer needed. A project life might also be cut short if the client (customer or sponsor) wishes to terminate the project (PMI, 2013).

A project has certain characteristics that differentiate it from other endeavors. The major characteristics of a project are listed below:-

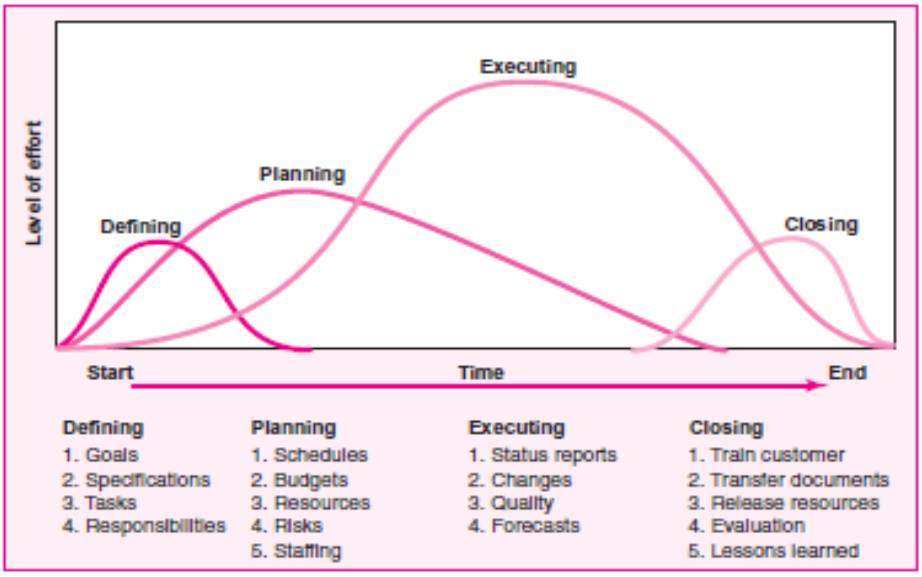
- A project has a clear and defined objective
- A project is temporary in nature meaning it has a defined life span with a beginning and an end

- A project is unique it sets out to do something that has never been done before
- 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)

A project can be split into different developmental phases called a project life cycle. The life cycle recognizes that projects have a predetermined life span and that there are expected changes in the level of effort and focus on the project's existence. The life cycle allows the assessment of a series of resemblances that can be found in every project, regardless of context, applicability, or area of activity. There are many different life-cycle models in project management text. Many are unique to a specific type of project. Typically a project passes sequentially through four stages: defining, planning, executing, and closing (Larson, 2011).

1. Defining stage: The project's need is identified, specifications of the project are defined, objectives are established, teams are formed, and primary responsibilities are assigned.
2. Planning stage: The level of effort increases and plans are developed to determine what the project will entail when scheduled, who it will benefit, what quality level should be kept, and what the budget will be.
3. Executing stage: A major portion of the project work takes place both physically and mentally. The physical product is produced (bridge, building, hardware, or a software program). Time, cost, and specification measures are used for control, and revisions or changes are done if necessary.
4. Closing stage: Closing includes three major activities: delivering the project product, service or result to the customer, redeploying project resources and post-project review. Delivery of the end product of the project might include customer training and transmitting documents. Relocation usually entails releasing project equipment/materials to other projects and finding new assignments for team members. Post-project reviews include not only assessing performance but also capturing lessons learned (Larson, 2011).

Figure 2. 1: Project Life cycle



Source: (Larson, 2011)

2.2.2. Project management

Most authors agree that project management is about achieving time, cost, and quality targets within the context of customer requirements by using project resources. As described by the PMBOK project management is defined as "the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project management is accomplished through the appropriate application and integration of the project management processes identified for the project. Project management enables organizations to execute projects effectively and efficiently." (PMI, 2017)

Project management incorporates classical management functions like planning, organizing, directing, and controlling. Therefore project management is 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. Moreover, project management makes use of the systems approach to management by having functional personnel assigned to a particular project (Kerzner, 2011).

Project management is no longer exceptional need management; it has become a standard way of doing business with today's fast-changing market environment. Project management is

distinguished byways 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).

Project management is nowadays 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, will be exhausted on projects each year in the decade 2010-2020. As mentioned by the Society of Human Resources in the coming years, many skilled project management practitioners will be leaving the workforce due to a trend that will have a significant strategic impact on over 60% of the organizations worldwide (Zandhuis & Stellingwerf, 2013).

Project management offers significant benefits than using other management techniques in managing projects. Some of the benefits are identifying functional responsibilities to ensure that all activities are taken into consideration and minimize the need for continuous reporting. Also, identification of time constraints for scheduling, Identification of a methodology for trade-off analysis, Measurement of accomplishment against plans, early identification of problems, improved estimating capability, etc. However, the benefits cannot be achieved without overcoming obstacles like project complexity, scope changes, project risks, changes in technology, organizational restructuring and planning (Kerzner, 2011).

The project manager plays a crucial role in the success of the project management method. According to (Antvik & Sjöholm, 2007), a project manager needs to have the exact skills and personal attributes, and most importantly, the ability to be an effective leader and carry out the role. Project managers provide direction, coordination, and integration to the project team, vendors, suppliers and subcontractors. The project manager must decide what and how things should be done instead of merely managing a set of processes. They must meet the objective (goals) of each phase of the project life cycle, and even oversee the closure of their operation when the project is finished. Project managers must work with a diverse group of characters and professionals to complete projects. Project managers are usually the direct link to the customer and must deal with the tension between customer expectations and what is possible and

reasonable. Project managers are ultimately responsible for the performance of the project. They must make sure that appropriate trade-offs are made among the project's time, cost, and performance requirements. At the same time, they must coordinate the project's completion by inducing the right people, at the right time, to address the right issues and make the right decisions. Therefore the project manager is an integral part of project management. (Larson, 2011)

2.2.3. Project management practices and standards

Many research evidences suggests that when managing projects, the structured application of project management, fundamental knowledge, and ethical practices enhances successful delivery. To have a successful project, it takes more than a skilled, experienced, knowledgeable and competent project manager. It calls for basic project management knowledge from all project stakeholders and various well-defined processes, implemented in practice, to smooth the progress of real cooperation and ensure realizing the drive to make it happen (Zandhuis & Stellingwerf, 2013). The role of standards for the project management profession has been a vital issue for several years (Duncan, 1995).

Many companies and organizations use a project management system to establish consistent methods in their work. An integrated project management system also facilitates the establishment of a certain level of professionalism in an organization. All areas and aspects of project management are included in the developed systems (Antvik & Sjöholm, 2007). These systems are developed as handbooks, including management activities that should be conducted in a project, which can be used as a guide for the project management team to ensure that all required plans and activities in the project are handled (PMI, 2013).

Different project management practices are available in the market that can be effectively adapted from international standards and guidelines like PMI, ISO, IPMA (International Project Management Association) & ANSI (American national standards institute). The different project management standards and practices have differences and similarities in their approach, use of terms, classification of processes and project life cycles (phases), applications (some are subject-specific) and many more.

The Project Management Institute (PMI), based in the USA, has created the oldest and the most often used body of knowledge of project management (PMBOK). It is continuously updated, and in its sixth edition, it has identified ten knowledge areas with 49 processes and five process groups. While the Association of Project Management (APM) from the UK launched its body of knowledge in 1988 which was quite different from PMI's. It includes project management topics (such as planning and control techniques), but also broader issues in which the project is being managed, such as social and environmental, as well as subject-specific areas. The APM BOK (body of knowledge), in its fifth edition, identified seven knowledge areas further divided into 40 elements or processes. The other standard is the International Project Management Association (IPMA) registered as an international organization in Switzerland in 1998. The IPMA developed an IPMA Competence Baseline (ICB) in 1999, and the ICB contains forty-two elements, providing twenty-eight essential and fourteen additional aspects of knowledge and experiences of project management. Another standard is the ISO 21500 guidance on project management prepared by the ISO (International organization of standardization). The ISO 21500 guideline is a reference from other project management standards, methods, and best practices, such as PMBOK, PRINCE2, Agile and ICB, and it brings the best project management practices together. The ISO standard contains 10 Subject groups (knowledge areas) and 39 project management processes. Other than the practices mentioned above, there are also prince2, agile, Japan's P2M, etc.

Although there are different project management practices to choose from, this study will be benchmarking the PMI (project management body of knowledge) and the ISO 21500 (guidance on project management). The PMBOK Guide includes knowledge and practices that apply to most projects most of the time (which could apply to all subject areas). The ISO brings the best project management practices together and companies in Ethiopia have previous experience with ISO.

Table 2. 1: project management processes ISO 21500 vs. PMBOK Guide-Fifth Edition

	ISO 21500	PMBOK Guide-Fifth Edition
Subject area	Process	Process
Integration	4.3.2 Develop project charter	4.1 Develop Project Charter
	4.3.3 Develop project plans	4.2 Develop Project Management Plan 5.1 Plan Scope Management 6.1 Plan Schedule Management 7.1 Plan Cost Management 9.1 Plan Human Resource Management 11.1 Plan Risk Management 13.2 Plan Stakeholder Management
	4.3.4 Direct project work	4.3 Direct and Manage Project Work
	4.3.5 Control project work	4.4 Monitor and Control Project Work
	4.3.6 Control changes	4.5 Perform Integrated Change control
	4.3.7 Close project phase or project	4.6 Close Project or Project Phase
	4.3.8 Collect lessons learned	-
Stakeholders	4.3.9 Identify stakeholders	13.1 Identify Stakeholders
	4.3.10 Manage stakeholders	13.3 Manage Stakeholder Engagement 13.4 Control Stakeholder Engagement
Scope	4.3.11 Define Scope	5.2 Collect Requirements 5.3 Define scope
	4.3.12 Create work breakdown structure	5.4 Create WBS
	4.3.13 Define activities	6.2 Define Activities
	4.3.14 Control scope	5.5 Validate Scope 5.6 Control scope
Resources	4.3.15 Establish project team	9.2 Acquire Project Team
	4.3.16 Estimate resources	6.4 Estimate Activity Resources
	4.3.17 Define project organization	9.1 Plan Human Resource Management
	4.3.18 Develop project team	9.3 Develop Project Team
	4.3.19 Control resources	-
	4.3.20 Manage project team	9.4 Manage Project Team
Time	4.3.21 Sequence activities	6.3 Sequence Activities
	4.3.22 Estimate activity durations	6.5 Estimate Activity Durations
	4.3.23 Develop Schedule	6.6 Develop Schedule
	4.3.24 Control schedule	6.7 Control Schedule
Cost	4.3.25 Estimate costs	7.2 Estimate Costs
	4.3.26 Develop budget	7.3 Determine Budget
	4.3.27 Control costs	7.4 Control Costs
Risk	4.3.28 Identify risks	11.2 Identify Risks
	4.3.29 Assess risks	11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis
	4.3.30 Treat risks	11.5 Plan Risk Responses
	4.3.31 Control risks	11.6 Control Risks
Quality	4.3.32 Plan quality	8.1 Plan Quality Management
	4.3.33 Perform quality assurance	8.2 Perform Quality Assurance
	4.3.34 Perform quality control	8.3 Control Quality
Procurement	4.3.35 Plan procurements	12.1 Plan Procurement Management
	4.3.36 Select suppliers	12.2 Conduct Procurements
	4.3.37 Administer contracts	12.3 Control Procurements
Communication	4.3.38 Plan communications	10.1 Plan Communication Management
	4.3.39 Distribute information	10.2 Manage Communications
	4.3.40 Manage communications	10.3 Control Communications

Source: (Zandhuis & Stellingwerf, 2013)

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

In the initiating 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. The purpose of the initiating process group is to align the stakeholders' expectations and the project intention, notify stakeholders of the scope and objectives, and converse how their participation in the project and its connected phases can help to ensure their expectations are achieved. Within the initiating process group, different activities are accomplished; for example, the project manager is assigned, the initial scope of the project is defined, initial financial resources are committed, stakeholders are identified, and the project charter is prepared and approved. After

the project charter is approved, the project manager is authorized to apply organizational resources to project activities (PMI, 2017).

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

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).

2.2.4.3. Project Executing Process Group

In the executing process group, everything planned is carried out, and any error encountered in the previous phases will manifest during this phase. A large part of the project's estimate and effort is consumed in this phase (Vargas, 2008). 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

This process group deals with tracking and controlling everything that is being carried out by the project to propose corrective and preventive actions in the least time possible after the detection of an abnormality. The purpose of control is to compare the present project status with that foreseen by planning and to take corrective actions in case of deviation (Vargas, 2008). 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 Monitoring and Controlling Process Group comprises processes linked to answering the vital question, "How will you know you did it?". 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 the 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

The Closing Process Group consists of the processes performed to formally complete or closes a project, phase, or contract. 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 (PMI, 2017). In this process, group 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 new projects (Vargas, 2008).

The closing process group answers the question, "How well did you do?" plus comprises processes related to the project's completion. This process group consists of 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. This Process

Group may also address the early closure of the project if they are aborted or canceled (Robert, 2014).

2.2.5. Project management practice in the construction industry

The construction industry is the foundation for economic development. Construction is a crucial sector for every society, economy, and culture, especially for developing countries (Knoepfel, 1992). In construction specifically, there is a long history of project management practice and standard framework that have been set up, which have gotten settled. However, they have not usually created the best incentive for the client. Every project is extraordinary and unique, and due to the budget and time limitations, the final product is an untested prototype, which has been susceptible to design variations. Therefore, this is a particular challenge to an industry that has not standardized its outputs. The sector is also entirely disintegrated with inexperienced clients and separate design and construction organizations (Fewings, 2005).

The construction industry also struggles with the supply chain and the inability to deliver according to the client's targets. The supply chain can usually be quite long and presents additional challenges to the construction project manager who needs to co-ordinate the design and construction sides and make decisions based on the promises of others. Also, it is a challenge to deliver to a tight time, cost, and quality targets set by most clients. In response, the construction industry has adopted a much more client-orientated view. This view allows alternative procurement strategies, where design and construction are much more integrated, and opportunities for the development of the brief to take account of project constraints and ongoing business opportunities are recognized (Fewings, 2005).

Nowadays, there are different books, training, and software that are designed to overcome project management problems, specifically in the construction industry. Different project life cycle models (PMLC) are intended to aid the project management processes in the construction industry. As (Hailu, 2016) pointed out despite all the best practices, the predictability of project outcomes is still an issue of concern. Failure to achieve targeted time, budgeted cost, and specified quality result in various unexpected adverse effects on the projects.

2.3. Empirical literature review

In this section of the study, different reviewed literature relevant to the study will be discussed. The literature reviewed shows that there have been researches done to assess various organizations' project management practice in Ethiopia. However, many research studies confirm that the project management practice in this country is on its infant stage. In this study, both local and international literature was reviewed for the study.

Primarily literature related to the project management practice of the Ethiopian construction industry was reviewed. Accordingly (Ayalew, 2016) conducted a study titled "Assessment on Performance and Challenges of Ethiopian Construction Industry" to reveal the construction industry's level of project management practice. The study involved a literature review & used a structured questionnaire as a research instrument. The research involved 69 professionals from significant stakeholders of the construction industry. According to the response of the professionals and reviewed literature, the study concluded that the level of construction project management practices in terms of adopting general project management procedures, functions, tools & techniques to be unsatisfactory. Moreover, the study found that the level of practice of variables, such as cost, safety, risk, and time management, is to be deficient compared to their predetermined or planned values.

Another research by (Hailu, 2016) was done to identify which processes of project management are effective for attaining the success of a project by studying cases of a successful and failed project. The research was carried out on two major building construction projects which one was successful, and the other is a failed project. The study on the two projects used a survey questionnaire as an instrument of the research. The research pointed out that if 88% of those effective knowledge area processes like quality, cost, time & communication processes are applied, then the success of a project is inevitable. The study output has shown that the triple constraints like cost, quality, and time, and the communication processes of the subject groups are the most effective project management processes towards the project's success. Moreover, planning processes from the process groups are useful for achieving the success of projects. The study also concluded that significant numbers of projects in Ethiopia are under the failed category. So, it recommends project management processes like planning, time, quality, cost, and

communication processes have to be given considerable attention during implementation of the project.

(Yimam, 2011) also conducted a study on the Ethiopian construction industry titled "project management maturity in the construction industry of developing countries (the case of Ethiopian contractors)". The study aimed to assess whether and to what extent the processes, practices & tools under each project management knowledge area are being applied by the Ethiopian contractors in managing their construction projects. The research used interviews and questionnaires as an instrument and distributed it to 18 selected Ethiopian grade I contractors. Based on the responses from the survey and interview, the research concluded that project management process maturity and practice maturity of the contractors is found to be at a low level. Also, the knowledge areas of material, procurement, cost, time, financial, and human resource management have shown comparatively high maturity compared with other knowledge areas, and the project management maturity of contractors with ISO certification is found to be higher than those that didn't get certified.

Form the above three studies, and we can see that the maturity of project management practice in the construction industry is low, and the emphasis is not given to the major constraints of projects such as time, cost, and quality. Also, the studies focused on the knowledge areas of project management when conducting the studies.

Secondly, literature related to the project management practice of government and private organizations in Ethiopia was reviewed to understand the level of practice in different organizations. A study titled "Assessment of project management capability: A case study at Mesfin Industrial Engineering PLC" set out to assess the company's current level of project management practice. The study used an interview & semi-structured questionnaire to collect data from the different departments of the organization. The research suggested that the company was operating at a foundation level and also that this maturity was not achieved by all the project management knowledge areas and best practices. The study concluded that the project management processes defined & planned during the planning stage are not consistently applied to all projects implemented by the company (Temesgen, 2013).

Another study was conducted by (Karlsson, 2011) on the project management practice in Sweden & Ethiopia and potential improvements in project management methods. The research was performed on one of the most prominent private organizations in Ethiopia, Midroc, and its subsidiary in Sweden. It aimed to identify successful project management methods and share between the two organizations to increase efficiency and minimize the risk of construction projects. The research used observation, informal interview, and document analysis to come up with the result. The study concluded that there are several areas of improvement in Midroc Ethiopia and only a few in the Sweden counterpart. In the Ethiopian company, the planning process is not prioritized, and many of the projects start execution without sufficient planning. Also, project control is not prioritized, and rather than controlling; problems are solved as they occur. Moreover, issues also arise in project management systems, integration management, human resource, cost, time, and procurement management.

From both kinds of research discussed, we can point out that the project management practice at the organizational level is also low as the construction industry. Although there are some practices adopted and some level of understanding of project management, there is a long way to go in implementing the practices properly.

Lastly, previous literature on ECDSWC was reviewed to show the literature gap that must be filled. (Rahel, 2017) worked on the assessment of the quality management practice of ECDSWC. The study used questionnaire as an instrument for collecting data. The study concluded that although the organization has adopted ISO 9001:2008 quality management system, there are problems in the implementation of the system. The study also showed that top management is more committed to the project quality planning process than quality assurance and quality control. Moreover, employee's participation in quality programs & awareness on their contribution to project quality is low.

Another research was conducted by (Mahlet, 2019) on the stakeholder management practice and challenges in ECDSWC to identify key stakeholders, defining the role of the stakeholders, and examining the difficulties encountered. The research concluded that the organization focuses more on managing internal stakeholders that have contractual relationships than external. Also, the survey discovered that there is very little adaptation of stakeholder management practices in

the construction sector. Both studies done in ECDSWC showed that there are some gaps in quality management and stakeholder management practice within the corporation.

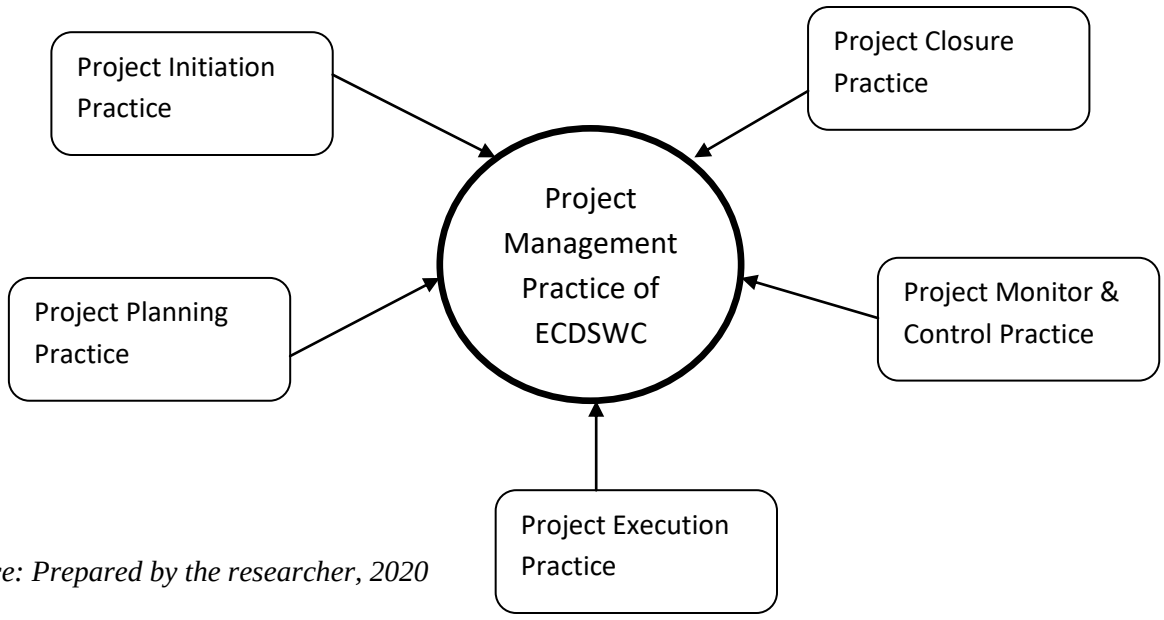
2.4. Research Gaps

From the literature and empirical reviews, it can be concluded that adequate research had not been done in evaluating project management practices of public and private organizations in Ethiopia. From the reviewed literature and to the best of the researcher knowledge there is no previous work on assessing the project management practice of ECDSWC. By assessing the project management practice of ECDSWC, 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 mega and strategic public projects in Ethiopia.

2.5. Conceptual Framework

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

Figure 2. 2: Conceptual Framework



Source: Prepared by the researcher, 2020

CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

This chapter presents the research design and methodology used by the research. The section discusses issues of research approach, design, data sources, data collection methods and instruments used in the study. Also, it explains the reliability and validity of the data collected and finally, ethical issues concerning the project work.

3.2. Research Approach and Design

3.2.1. Research Approach

The study used both qualitative and quantitative approach, also known as a mixed 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 and also determines in which situations and for what units the drawn conclusions are valid. Moreover, (Creswell & Plano Clark, 2007) suggested that the mixed approach is used so that the overall strength of a study is higher than either qualitative or quantitative research.

3.2.2. Research Design

The research design used is a descriptive type in nature which describes the particular project management practices within ECDSWC. The descriptive research portrays the characteristics of the project management practice within the organization accurately. Since, descriptive studies are concerned with describing the characteristics of a particular individual, situation or group. The primary purpose is a description of the state of affairs as is 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. The Population of the Study

The population of the research comprises employees of Ethiopian construction design and supervision Works Corporation who are directly involved in projects. The research targets employees those are responsible for planning, executing, controlling and supporting overall project implementation within the organization. The target population is comprised of project managers, project coordinators, project members, and project support staff within the organization. The target population identified within the organization is found to be fifty employees. For the study census survey was 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 50 participants to participate, which reduces the concern of accuracy, as stated by (Parker, 2011). For the qualitative method the samples were selected purposively form the target population. Accordingly, individuals who worked in the project management office and have sufficient information about the project management practice of the organization were selected. Thus, the selected samples are assumed to have sufficient knowhow and experience on project management of the organization. Based on these criteria the project, program & system process executive officers both at corporate and water sector level were selected for an interview.

3.4. Data Type, Source and Method of data collection

The study used both primary and secondary data sources to get sufficient information. The primary data source was collected from the field by using a semi-structured interview and questionnaire instruments. Also, the study used company documents, project reports, articles, journals, researches and books as a secondary source of data. The data sources helped to understand the issue conceptually and identify a good model to assess the project management practice within ECDSWC.

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. A questionnaire was used in the study 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 are 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).

The questionnaire was designed by benchmarking the five process groups defined by PMBOK and based on the review of related literature to meet the aims and objectives of the study. Therefore the questionnaire was designed by adopting and modifying surveys from related researches by (Sajeda, 2011), (Wondimu, 2016) and (Tigest, 2017) and in addition, by using processes defined by PMI (PMBOK) and ISO (ISO 21500, project management guidance).

The questionnaire was printed, then distributed to the respective departments and collected by hand. Also, the questionnaire was distributed and obtained by using an online platform called Google Forum to reach the population found in remote project areas.

3.4.2. Direct Interviews

The primary data was also collected by administering a semi-structured interview with the project, program & system process executive officers both at corporate and water sector level within the organization. Interviews, as described by (Svenning, 2003), are a useful tool 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. The interviewer should be flexible, to get a good result, adapt to responses and new topics that are revealed during the interview. Also, the interviewer should either take notes or record the interview to get useful compiled data (Svenning, 2003). The interviews were conducted to get the needed detailed information and data about the project management practices within ECDSWC.

3.5. Data analysis & Presentation

The data collected by the research 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 descriptively

analyzed by using SPSS software version 20. The quantitative data is presented by using frequencies, means, percentile and bar charts. 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.

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. 1: Scale Reliability Result

Variables	**Cronbach's alpha coefficient**	**No of Items**	**Scale**
Project Initiation	0.761	2	1-5
Project Planning	0.906	12	1-5
Project Execution	0.878	8	1-5
Project Monitor & control	0.891	10	1-5
Project Closure	0.886	2	1-5
Overall Reliability	**0.954**	**34**	

Source: Field Survey, 2020

3.7. Ethical Consideration

This research used ethical and morally acceptable processes throughout the preparation of this document. The research used processes such as, instruments were applied by requesting the voluntary consent of the respondents and the data were collected with the full permission of the respondents. Also the confidentiality & anonymity of the research participants were kept throughout the study and different methods and processes were used to minimize the researchers and respondents bias. Generally diverse ethical issues were taken into consideration while doing this research.

CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1. Introduction

This chapter presents a comprehensive analysis & discussion of results acquired from the direct interview conducted and the questionnaire survey distributed among ECDSWC staff members. 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. Also, tables, pie charts and bar charts were used to present the data.

This chapter is classified into five sections: the first section describes the questionnaires response rate. The second section discusses the demographic profile of the respondents. After that, the next part presents the result for general project management issues within the organization. The following portion displays the result and discussion for project management practice within ECDSWC. The last or Fifth section, assess the project management practice in the organization and compares the research findings with other literature reviewed.

4.2. Response Rate

Among the total of fifty questionnaires distributed within the organization, forty were adequately filled and returned. This shows there is an 80 % response rate which is assumed to be enough to do further analysis. Also, an interview was conducted with the ECDSWC project, program & system management process executive officer and water sector project, program & system management process executive officer.

Table 4. 1: Response Rate

Method of questionnaire distribution	Number of Distributed questionnaires	Number of Returned questionnaires	Response Rate (%)
Physically using hard copy questionnaires	30	25	83.34
Using online platform Google form	20	15	75
Overall	**50**	**40**	**80**

Source: Field Survey, 2020

4.3. Demographic Data

In order to provide the demographic information and composition of the population under study, the respondents were asked about their gender, age, education level, years of experience in the organization, position in the organization and if they had previous project management training or education.

Table 4. 2: Respondents Gender Profile

Gender		Frequency	Valid Percentage (%)	Cumulative Percentage (%)
Valid	Male	32	80.0	80.0
	Female	8	20.0	100.0
	Total	40	100.0	

Source: Field Survey, 2020

As shown in the table above the survey included a higher percentage of male participants (80%) than female participants (20%), this indicates that the gender distribution of the study is not proportional.

Table 4. 3: Respondents Age Profile

Educational Background		Frequency	Valid Percentage (%)	Cumulative Percentage (%)
Valid	Below 30	1	2.5	2.5
	31-40	28	70.0	72.5
	41-50	7	17.5	90.0
	Above 50	4	10.0	100.0
	Total	40	100.0	

Source: Field Survey, 2020

The result illustrates that one respondent (2.5%) is below the age of 30, 28 respondents (70%) are between the age of 31 and 40, 7 respondents (17.5%) are between the age of 41 and 50 and 4 (10%) respondents are above the age of 50. As we can see from the result, the field survey included a more mature audience.

Table 4. 4: Respondents Educational Background & project management training

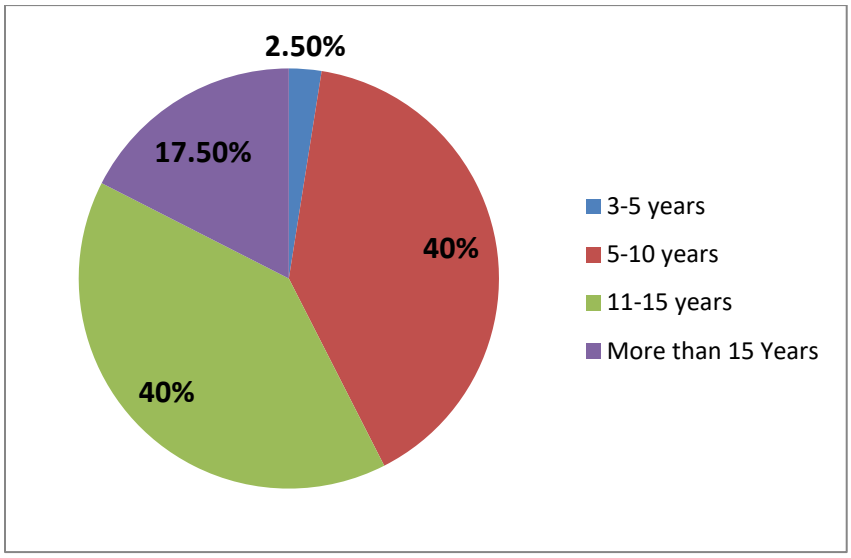
Educational Background		Frequency	Valid Percentage (%)	Cumulative Percentage (%)
Valid	PHD	0	0	0
	MA/MSc	29	72.5	72.5
	BA/BSc	11	27.5	100.0
	Diploma	0	0	100.0
	High school certificate	0	0	100.0
	Total	40	100.0	
project management training		**Frequency**	**Valid Percentage (%)**	**Cumulative Percentage (%)**
Valid	Yes	38	95.0	95.0
	No	2	5.0	100.0
	Total	40	100.0	

Source: Field Survey, 2020

Table 4.4 presents the educational and project management training background of the respondents who participated in the study. As shown in the table, 72.5% of the respondents have

a master's (MA/MSc) degree education, and the other 27.5% have a bachelor degree (BA/BSc) education. Moreover, 95% of the respondents have project management training ranging from 5 days to 6 months. The educational background and project management training experience suggests that the respondents would understand and interpret the research instrument and offer reliable information.

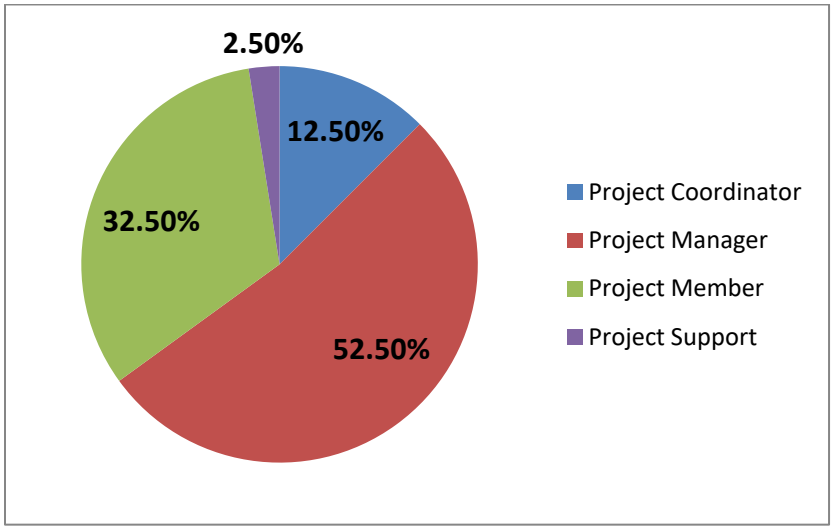
Figure 4. 1: Professional Experience



Source: Field Survey, 2020

From the above figure, we can see that majority of the respondents have more than ten years experience where 40% of the respondent has 11 to 15 years experience, and 17.5% of the respondents have more than 15 years experience. The other 40% of the respondents have 5 to 10 years of experience, and 2.5% have 3 to 5 years of experience. 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.

Figure 4. 2: Respondents Profile by position within the organization



Source: Field Survey, 2020

As it can be observed from the above figure 4.2, the survey collected data from employees that are directly involved in project work. The majorities (52.5%) of the respondents are project managers, and the others are project members (32.5%), support (2.5%) and project coordinators (12.5%).

4.4. Project Management Practices

4.4.1. 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. 5: General Project Management Issues

Project Management Issues		**Frequency**	**Valid Percentage (%)**
Is there a separate project management department in your organization?	Yes	31	77.5
	No	9	22.5
	Total	**40**	**100**
Is there a project management training access in the organization?	Yes	35	87.5
	No	5	12.5
	Total	**40**	**100**

Source: Field Survey, 2020

The table 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 77.5% 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 organization has adopted a combined prince2 and PMI (PMBOK) standard & practices by integrating it with ISO 9001, 2015 quality management system. As an operating procedure, the organization uses a generic project management method where the high-level structure or framework is derived from PMI (PMBOK), and the detailed processes are more of prince2. The result shows that majority of the respondents are aware that there is a project management office within the organization.

The respondents were also asked if there is a project management training access within the organization, and 87.5% replied yes by further describing that they have attended once, yearly or semiannually. The responses show that the organization is keen to apply project management practice within its organization by increasing its employee's capabilities towards project management.

Table 4. 6: Major Project challenges in the organization (Multiple Response Set Result)

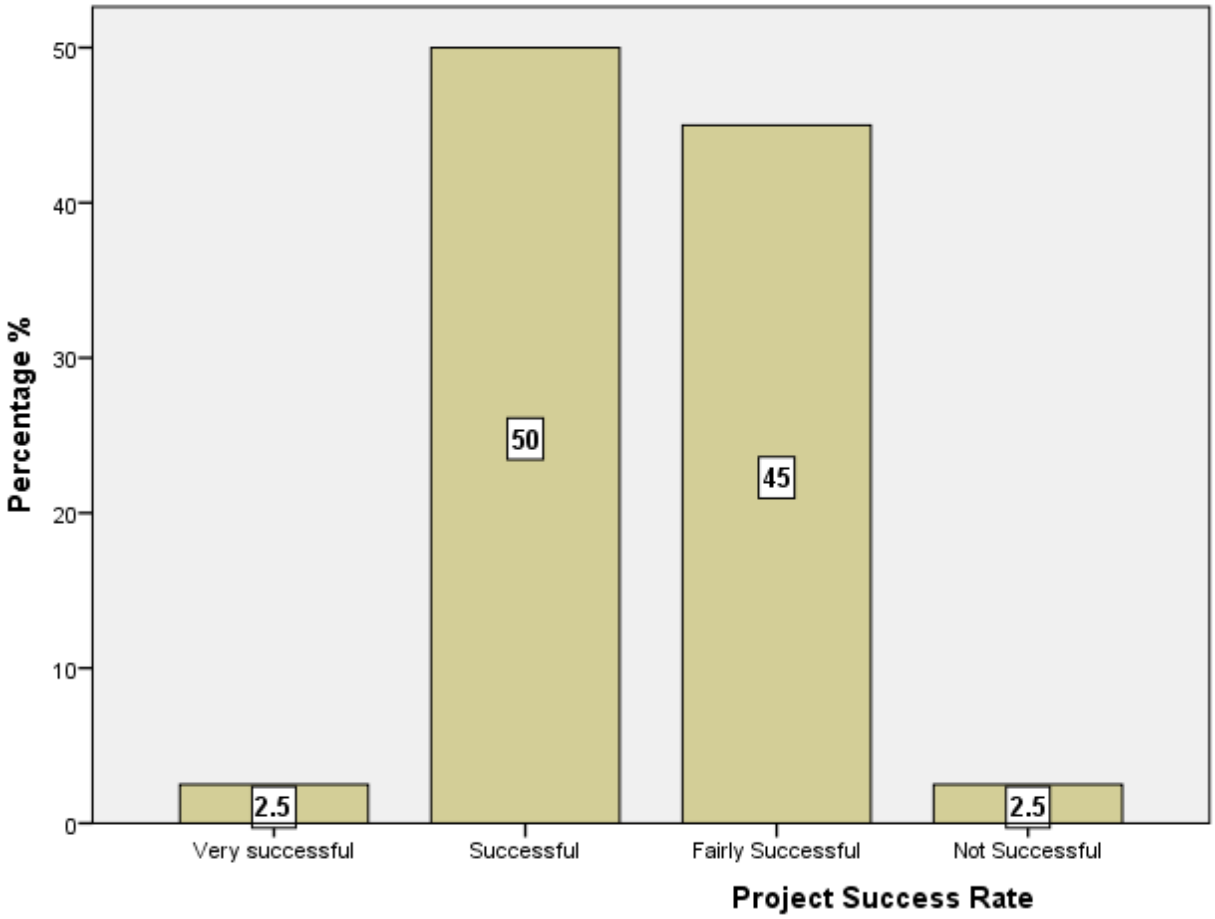
Major Challenges to The Projects in The Organization		**Frequency**	**Percentage (%)**
Internal	Lack of Clarity in the scope of the Project	13	11.3
	Time, Cost and Quality	31	27
	Resources	16	13.9
	Policies and Procedures	10	8.7
External	Organizational Culture	18	15.7
	Government	11	9.6
	Environment	16	13.9
	Total	**115**	**100**

Source: Field Survey, 2020

Table 4.6 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 resource issues. From the external ones, issues of organizational culture and the environment have been identified as a major challenge.

The interview results indicate the same outcome as described above. According to the response given by project, program & system management process executive officers at corporate and water sector-level issues of time deviations range 200% to 300% and cost deviations range from 300% to 400%; also resource and environmental problems are identified as major challenges within the organization.

Figure 4. 3: Respondents opinions on project success rate in relation to project management within the organization



Source: Field Survey, 2020

The figure above presents the perception of the respondents regarding the success rate of projects within the organization. According to the finding, 2.5% of the respondents believe projects within their organization are very successful; 50 % of the respondents think the success rate is successful. In comparison, 45% of the respondents assume it is fairly successful, and 2.5% think it is not successful. According to the project management office, the project success rate within the organization was evaluated, and the result presented that there is 70-77% success rate. These show inconsistency with the result from the survey implying that the perception of the respondents is very harsh or the evaluation is wrong.

4.4.2. 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 a 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 to what degree 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. 7: 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)

4.4.2.1. Project Initiation Process group

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

Table 4. 8: Project Initiation Practice Result

Project Initiation Activities	Mean	Standard deviation	Percentage Mean (%)	PM practice level
There was appropriate preparation of "Project Charter" which describes scope, objectives, time, budget, and risks.	3.73	0.847	74.6	Moderate
Every stakeholders that affects the project is identified	3.68	0.859	73.6	Moderate
Overall average value	**3.70**	**0.766**	**74**	**Moderate**

Source: Field Survey, 2020

Table 4.8 shows that project initiation practices within the organization to be moderate with an overall mean of 3.7 and a standard deviation of 0.766. Both the processes presented under this processes group are rated at a moderate level with identifying stakeholders showing a slight decrease in mean value compared to the preparation of project charter.

The interview result indicates the same as the survey found were the respondents replied that this process group is exercised at a moderate level were the initiation documents are prepared, the stakeholders are identified, and also the project manager is assigned at this stage of the project.

4.4.2.2. Project Planning Process group

The study sought to determine the degree to which project planning process group was applied in ECDSWC. The respondents were asked to specify the degree to which they agree with the statement in relation to project planning. Hence the results are presented in the table 4.9 below.

Table 4. 9: Project Planning Practice Result

Project Planning Activities	Mean	Standard deviation	Percentage Mean (%)	PM practice level
There were preparations of detailed project plan that describe how to implement the project.	4.03	0.768	80.6	High
The requirements needed for the project are collected and the scope of the project is defined thoroughly	3.80	0.723	76	Moderate
All the activities of the project are defined and documented	3.80	0.758	76	Moderate
By using the above defined activities a work breakdown structure (WBS) is created	3.95	0.815	79	Moderate
A clear project organization is defined showing how the project will be organized	3.85	0.700	77	Moderate
The resource needed for the project is estimated (the team resource, the bill of quantity is developed)	3.98	0.733	79.6	Moderate
The project activities defined are sequenced, there activity duration is estimated and there schedule is developed & documented (by using critical path method or any other method)	3.80	0.758	76	Moderate
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.	4.00	0.784	80	High
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.	2.95	0.986	59	Low
The quality targets for the project are identified. The quality plan is developed to monitor the quality of the outputs and	3.70	0.911	74	Moderate

to identify actions that will be used to achieve the required quality.				
The procurement plan is prepared appropriately and also a clear term of references is prepared for tendering documents.	3.55	0.932	71	Moderate
There was appropriate preparation of communication plan for all related parties in the project.	3.45	0.959	69	Moderate
Overall average value	**3.73**	**0.578**	**74.6**	**Moderate**

Source: Field Survey, 2020

The result from table 4.9 specifies that the project management planning practice is at a moderate level with 3.73 mean score and 0.578 standard deviation. From the table above preparation of detailed project plan and development of total cost and project budget planning activities are rated high. The preparation of a comprehensive project plan is ranked high, with a mean of 4.03 (80.6%) and a standard deviation of 0.768. Also, the development of total cost and budget of the project was rated high with a mean score of 4.00 (80%) and 0.784 standard deviations. On the other hand, preparing a risk plan is rated at a low level with a mean value of 2.95 (59%) and 0.986 standard deviations and preparation of procurement plan and communication plan also have low mean values. In contrast, all the other activities are rated at a moderate level.

The interview finding further consolidates the above survey results. According to the interview responses, there is a good culture of planning practice within the organization they try to perform many of the processes under this process group but the planning activities like preparing risk, procurement and communication plans are given low attention compared to the others.

4.4.2.3. Project Execution Process group

The study wanted to find out the level to which project Execution process group was executed in the organization. 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 the table 4.10 below.

Table 4. 10: Project Execution Practice Result

Project Execution Activities	Mean	Standard deviation	Percentage Mean (%)	PM practice level
The project work is directed and effectively managed according to the project management plan	3.35	0.864	67	Moderate
There was effective communication between project stakeholder and project progress was reviewed frequently by the customer	3.62	0.807	72.4	Moderate
The resources needed for the project are acquired and managed accordingly	3.60	0.744	72	Moderate
The project team is developed and managed	3.60	0.810	72	Moderate
The risks encountered are dealt with and treated according to the risk response plan	3.03	0.832	60.6	Low
Effective management and performing quality assurance	3.65	0.736	73	Moderate
The procurement is conducted and effective management of the bidding process	3.48	0.816	69.6	Moderate
Effective management of communication according to the communication plan among all relevant parties	3.37	0.952	67.4	Moderate
Overall average value	**3.46**	**0.604**	**69.2**	**Moderate**

Source: Field Survey, 2020

Table 4.10 shows that the project execution resulted in an overall mean of 3.46 (69.4%) and standard deviation of 0.604, which indicates a moderate project management practice level. The management and performance of quality assurance activity have a higher mean score than the other processes; this is because of the ISO 9001 quality management system employed within the organization. The risk related activity in this process group is also rated low with a mean of 3.03 and 60.6 percentages. While the other activities are all rated moderate, with managing project according to the project plan, conducting procurement and effective management of communication plan project activities resulted in lower mean scores than the others.

From the interview conducted, it was founded that during the execution stage, the project manager is given enough freedom and has a directive role. The project manager is overseen by the team leader and the functional sub-process department. This process group, as described by the respondents, is characterized by conflict between the project manager and the functional manager and is also affected by different external factors.

4.4.2.4. 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 ECDSWC. 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 the table below.

Table 4. 11: Project Monitoring & Controlling Practice Result

Project Monitoring & Controlling Activities	**Mean**	**Standard deviation**	**Percentage Mean (%)**	**PM practice level**
Monitoring and controlling the entire project work	3.70	0.758	74	Moderate
There were effective management and integrated control of changes that arise during the implementation of the project.	3.43	0.712	68.6	Moderate
Controlling changes and also the scope so that the project is completed within the defined scope	3.23	0.800	64.6	Low
Effective Control of the project resources	3.50	0.784	70	Moderate
Effective controlling the project schedule so that it does not exceed the time constraint	3.15	0.921	63	Low
Appropriate control of project costs so that it does not exceed the cost constraint	3.32	0.859	66.4	Moderate
Monitoring for documented risk and new risks	2.73	0.816	54.6	Low
performing quality control so that it does not become below the stated quality targets	3.60	0.900	72	Moderate
Administer the procurements according to the contracts	3.20	0.939	64	Low

Monitor and control the communication	3.28	1.012	65.6	Moderate
Overall average value	**3.31**	**0.606**	**66.2**	**Moderate**

Source: Field Survey, 2020

The above table shows that project monitoring and controlling practice is rated at a moderate level, with a mean score of 3.31 and 66.2 percentage. Some of the project activities under this process group, for instance, controlling changes, control project schedule, monitoring for new risks and administering procurements according to the contract are rated at a low level with mean scores of 3.23 (64.6%), 3.15 (63%), 2.73 (54.6) & 3.20 (64%) respectively. In contrast, the other activities under this process group are rated at a moderate level. Besides monitor and control communication and control of costs, project activities resulted in low mean values.

The interview resulted in different findings that support the survey results listed above. During the interview, the respondents responded that projects mainly struggle with controlling changes, project schedule and cost. The change problems are mostly related to design change; either client need or ambitious planning causes this. The schedule and time deviations are very common and usually are a result of different causes. Moreover, the interview revealed that there is a low level of risk monitoring practice. The interview also founded that the projects in the organization are continuously monitored. The project manager report's the project status every two weeks to the respective team leaders and sub-process executive officers. Also, the project management office monitors the status of all the projects in the organization two times per year by sending professionals 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 is better accomplishing monitoring practices than the controlling ones.

4.4.2.5. 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 the table 4.12 below.

Table 4. 12: Project Closure Practice Result

Project Closure Activities	Mean	Standard deviation	Percentage Mean (%)	PM practice level
Evaluation of the project and determining the level of achievement of the objectives of the project and its success and lessons learned.	3.20	1.018	64	Low
Proper dissemination of the lessons learned from the projects and documentation and archival of all documentation for projects after their completion.	2.77	0.974	55.4	Low
Overall average value	**2.98**	**0.943**	**59.6**	**Low**

Source: Field Survey, 2020

Table 4.12 specifies that the project closure process group, project management practice level is rated low. Project closure process group resulted in a mean value of 2.98, a standard deviation of 0.943 and 59.6 percentage mean level. Both the activities under this process group are rated at a low level. Evaluation of the project activity is evaluated at a mean score of 3.2, and dissemination & documentation of lesson learned process resulted in a much lower mean score of 2.77.

The interview findings imply that the organization suffers from documentation problems. During project closure documentation of lesson learned differs from project to project, there is no continuous process it depends on the project manager or resident engineer in charge of the project.

4.5. Assessing the Project Management Practices within ECDSWC

As mentioned in the above section, ECDSWC had adopted a combined prince2 & PMI (PMBOK) standards and practices four years ago. Although it has been four years, the project management practice has not been implemented fully within all the projects in the organization. The findings suggest that one of the primary reasons for this delay is because of external problems as construction projects involve three parties (consultants, clients & contractors) their common understanding influences the project management practice in the organization. So, the survey results illustrate that there is a low awareness level, understanding and implementation of

project management practice within the construction industry. As a result, this has negatively affected the application of project management within the ECDSWC. This result agreed with (Mengesha, 2004) statement that the construction industry in Ethiopia faces many challenges in its ability to implement best practices. And it also coincided with (Ayalew, 2016) assertion that the level of project management practices in terms of adopting & implementing the project management standard to be insufficient.

According to the findings in the previous section, we can say that project management practices within ECDSWC range from low to moderate or average. The table below illustrates the overall project management practice level within the organization.

Table 4. 13: Project Process Group Result

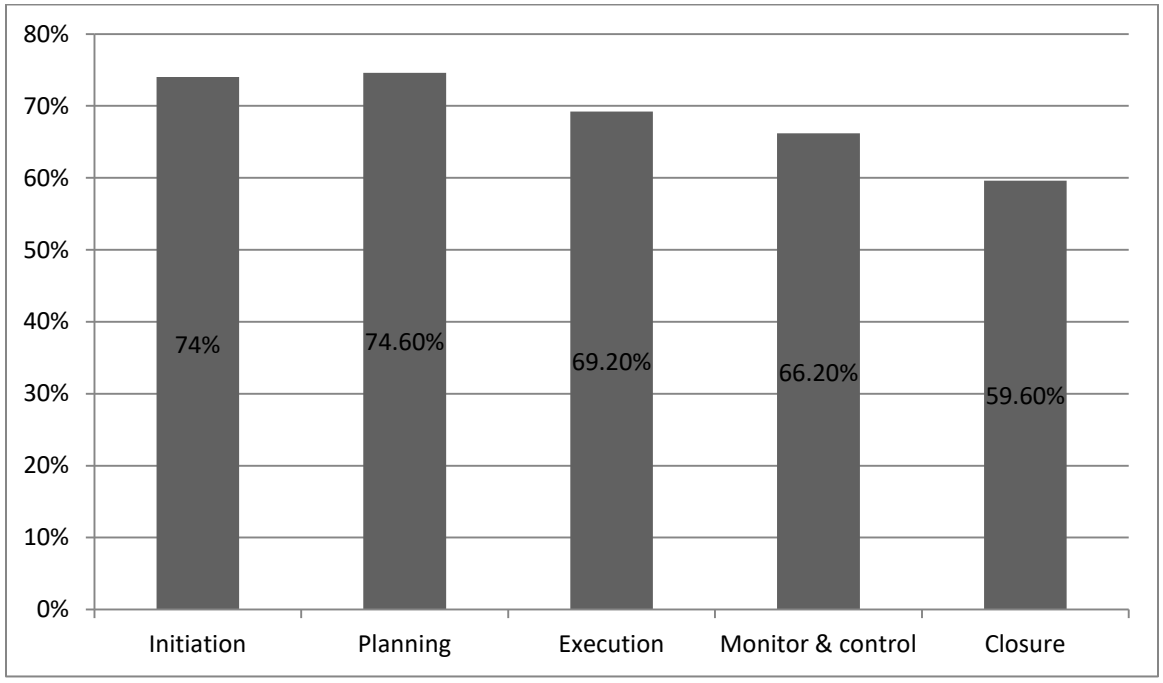
Project Process Groups	Mean	Standard deviation	Percentage Mean (%)	PM practice level
Project Initiation	3.70	0.766	74	Moderate
Project Planning	3.73	0.578	74.6	Moderate
Project Execution	3.46	0.604	69.2	Moderate
Project Monitor and control	3.31	0.606	66.2	Moderate
Project Closure	2.98	0.943	59.6	Low
Overall average value	**3.44**	**0.540**	**68.6**	**Moderate**

Source: Field Survey, 2020

As shown in table 4.13, the overall project management practice within the organization is rated to be moderate with a mean value of 3.44, a standard deviation of 0.540 and a 68.6 percentage mean.

The figure below illustrates the level of project management practice within the organization. As shown in the chart, the planning practice within the organization is better than the other process groups. 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.

Figure 4. 4: Project Process Groups Implementation Percentage



Source: Field Survey, 2020

As seen in the chart above the execution process group has low implementation level compared to planning and initiation. This is because activities like management of projects according to the project plan, management of risk, communication and procurements have low mean scores. This finding agreed with (Temesgen, 2013), stated that the project activities defined and planned during the planning stage are not consistently applied to all projects implemented.

The diagram also specifies that monitor and control practice has a 66.2% level which is lower than that of the execution. 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.

The project closure process group has the lowest mean value, and its practice level is rated low. The findings show that the organization suffers from a documentation problem. Although the organization has a management of information system department equipped with a full database and archive system, the result suggests that there is no continuous and consistent documentation

and dissemination of lesson learned from project to project. This shows that the project management office doesn't enforce project managers and other relevant members to document project activities and lesson learned.

Generally, the result shows that Ethiopian Constriction Design and Supervision Works Corporation have a moderate project management practice level. Also, the process groups planning, initiation, execution, monitor & control and closure are exercised in a descending level respectively. Moreover, findings of the research agreed with those of (Ayalew, 2016), (Hailu, 2010) and (Karlsson, 2011) who acknowledged that the level of practice of variables such as risk, procurement, cost, time and communication to be insufficient.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1. Introduction

This chapter presents the summary of the major findings of the data analysis. Based on the findings conclusions will be drawn about the project management practice within ECDSWC. The recommendations that can help to improve the project management practice within the organization are presented. Finally the suggestions by the researcher for future studies are discussed.

5.2. Summary of Major Findings

The research aimed to assess the project management practice in Ethiopian construction design and supervision Works Corporation. Based on the analysis of the results obtained, the major findings are:

- The organization has a project management office that has adopted a combined PMI (PMBOK) and prince2 standards and practices integrated with ISO 9001 quality management system. But the practice is not being exercised at every level within the organization.
- The organization also has a training department that gives project management training at least once a year.
- Regarding major challenges, results identified that problems related to time, cost, resource and external issues as significant challenges faced by the projects within the organization.
- The project initiation practice within the organization is rated at a moderate level were the activities under this process group are also rated moderate.
- The project planning practice within the organization is rated at a moderate level were activities such as preparing the detailed project plan, and the project budget is being performed at a high level. In contrast, activities related to risk, procurement and communication are performed at an inadequate level.

- The project execution process group is rated at a moderate level were the quality management related activities are being practiced better than activities related to managing risk, procurement and communication. Moreover, the activities planned during the planning stage are not sufficiently and consistently applied to projects during execution.
- The monitor and control practice is rated at a moderate level where the monitoring activities are implemented to a better extent than the controlling activities. The above finding showed that the project control practice is not prioritized within the organization.
- The project closure practice is rated at a low level where the implementation of the two activities under this process group is poor. Moreover, the result showed that the organization suffers from documentation and lesson learned dissemination problems.

Generally, the overall assessment of the practice within Ethiopian construction design and supervision Works Corporation (ECDSWC) resulted in a moderate level of score on the defined scale.

5.3. Conclusion

The principal objective of the study was to assess the project management practice in ECDSWC based on the process groups defined by the PMBOK. The study used both quantitative and qualitative methods by obtaining data from the field 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 ECDSWC revealed that the initiation, planning, monitor and control, and execution practices are practiced at an average level. In contrast, the project closure process group is practiced at a low level. Accordingly, the level of planning practice is found to be higher than the other process groups in the organization, while the project closure process group has the lowest practice level.

The study also identified the gaps within the project management practice of ECDSWC. Thus, the level of application of activities related to risk, procurement, communication, cost, time and documentations are poor. 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 ECDSWC in terms of performing the activities under each process group to be moderate. Also, the result of this research and information obtained from the literature reviewed showed that there is a gap within the project management practices of ECDSWC. 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 to be given more considerable attention during the implementation of projects within the organization.

5.4. Recommendations

In order to improve the project management practice within ECDSWC, the following possible recommendations are provided by the researcher:

- As a government organization, ECDSWC should create an awareness program on project management for its close partners (clients, contractors and other different stakeholders) by providing short term training, workshops and sharing its experience with project management standards and practices. It will help provide a common understanding between the involved parties and increase compliance between the parties while implementing project management practices.
- Strong emphasis should be given to project control and related activities. Also, project control must be prioritized by the organization.
- 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.
- The project management office must enforce a continuous and consistent documentation process. It will help the MIS department which is equipped with a full database and archive system to create proper dissemination of the lessons learned from the projects and documentation and archival of all documentation for projects after their completion.
- The project management office must ensure that the project management standard and practices are applied at all levels within the organization.

5.5. Suggestion for Future studies

While this research was able to offer additional insight into project management practices in ECDSWC, 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 ECDSWC. Moreover, more extensive research can be conducted in detail by including various parties within the Ethiopian construction industry to solve the project management problem.

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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 project managers and team members:

This interview is conducted to collect data for a research on: Assessment of project management practices: A case of Ethiopian Construction Design and Supervision Works Corporation (ECDSWC). The information is going to be used as a primary data for this research believing that your genuine responses will contribute vastly to the quality of the findings of this study. The researcher would like to ask you to kindly complete this interview, as truthfully as possible as the responses you provide will be kept confidential and will be used only for the study under consideration.

Thank you in advance for taking part in this endeavor.

Kind Regards

Bisrat Zerihun

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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?

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Direction

- ❖ No need of writing your name;
- ❖ Put "X" mark or circle 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:

1. Below 30 ☐ 2.31-40 ☐ 3.41-50 ☐ 4. Above 50 ☐

3. Educational Level:

1. PHD ☐ 2.MA/MSc ☐ 3. BA/BSc ☐ 4.Diploma ☐ 5.High School completed ☐

if other, please specify_____

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

5. Position in the organization:

1. Project Coordinator ☐ 2.Project manager ☐

3. Project Member ☐ 4. Project support ☐

If other, please specify_____

6. Years of Experience:

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.Quarterly ☐ 3.Semi-annually ☐ 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 ☐ 4.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 and ISO 21500 (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.

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

No.	***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					
	II. Project Planning					
	Indicator	**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, there activity duration is estimated and there 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.					

10	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.					
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.					
III. Project Execution						
	Indicator	**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 needed for the project are acquired and managed accordingly					
4.	The project team is developed and managed					
5.	The risks encountered are dealt with and treated according to the risk response plan					
6.	Effective management and performing quality assurance					
7.	The procurement is conducted and effective management of the bidding process					
8.	Effective management of communication according to the communication plan among all relevant parties					
IV. Project Monitoring & Controlling						
	Indicator	**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 and documentation and archival of all documentation for projects after their completion.					