



**ST. MARY'S UNIVERSITY SCHOOL
OF GRADUATE STUDIES**

**ASSESSMENT OF PROJECT MANAGEMENT PRACTICES IN
CORE CONSULTING ENGINEERS; THE CASE OF
DENBECHA-SEKELA ROAD PROJECT**

BY

KALKIDAN GEZU TILAHUN

ADVISOR

YILKAL WASSIE (Asst. Prof)

JULY, 2023

ADDIS ABABA, ETHIOPIA

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**A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF
GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF ART (MA) IN
PROJECT MANAGEMENT**

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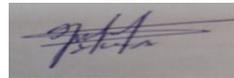
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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Yilikal Wassie(Ph.D.) All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree. It is offered for the partial fulfillment of the degree of MA in Project Management (MA).

Declared by:

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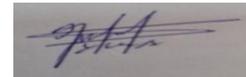
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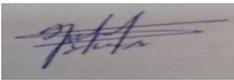


Date _____

ENDORSEMENT

This is to certify that Kalkidan Gezu Tilahun has carried out her research entitle assesment of project management practices in core consulting engineers; the case of Denbecha-Sekela road project. Under my supervision as university advisor. And I hereby certify that her work is original in nature and is suitable for the submission for the reward of MBA in Project Management.

Advisor: Yilikal Wassie(Asst. Prof)

A rectangular box containing a handwritten signature in blue ink, which appears to be 'Yilikal Wassie'.

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ACRONYMS/ ABBREVIATIONS

IHA: Imperial Highway Authority

PP: Prosperity Party

ORSG: Oromia Regional State Government

EC: Ethiopian Calendar

PM: Project Management

GDP: Growth Domestic Product

PMKA: Project Management Knowledge Areas

PMBOK: Project Management Body of Knowledge

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ABSTRACT

This study assesses the project management practices Core Consulting Engineer's Plc in the case of Denbecha-Sekella. Company that provides engineering services in various sectors. The assessment is based on the ten-knowledge areas of project management, as defined by the Project Management Institute. This research uses a quantitative research approach. The researcher collected both primary and secondary data. The primary data was collected from 70 professionals at core consulting engineers using a self-administered questionnaire through simple random sampling technique and analyzes it using descriptive statistics. The collected data were analyzed by using statistical tools (SPSS-Version 25). Descriptive statistics such as frequency, percent, mean, and standard deviation were employed to describe the demographic characteristics of respondents and variables for project management practice. The results show that core consulting engineers perform well in project integration management, schedule management, cost management, communication management, quality management, procurement management, risk management and stakeholder management but struggles with project scope and recourse management. The paper also suggests that the company should provide sufficient training for its project management personnel and staff. The paper concludes that the project management practice of core consulting engineer's plc is in reasonably good status, but can be enhanced by implementing the suggested recommendations.

Key Words: Project management, project management practices, Project success

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In Ethiopia's past, the development of "roads" or "tracks" was simply brought about by continuous influxes of travelers, animals, or erosion as opposed to deliberate and targeted construction efforts (Ayele, 1987). Only when the Imperial Highway Authority (IHA) was established in 1951 was a government agency given responsibility for building roads. Since then, a domestic road sector has developed as a result of collaboration between governmental and non-governmental organizations, as well as significant international financial, institutional, technical, and professional support. Also, the history of the road industry has been defined by a rise in professionalism in terms of capability, abilities, building methods, and approaches. The decentralization strategy offered a fresh environment for the development of the road sector following the overthrow of the previous administration led by the Prosperity Party (PP).

To date, a vast network of various roadways totaling 114,397 km has been built, maintained, and categorized. Roads have remained crucial, have continued to grow, and have outlasted the people who built them even as governments and policies have changed. Also, the PP government has established road infrastructure as one of the primary pillars of its development policy and highlights the significance of roads for development. Roads, particularly rural roads, are viewed in Ethiopia's development policy as "one of the critical aspects that substantially contribute to social and economic development" (ORSG, 2009), particularly in a nation where the majority of people live and depend on agriculture.

Three approaches can explain why road construction has been a domain of the state in Ethiopia. First, from an economic standpoint, a public benefit that is distinguished by non-excludability is a typical example of road infrastructure. As a consequence, the private sector has no interest in providing roads (Becker, 2006). (Becker, 2006). Hence, building roads has always been a responsibility of the Ethiopian government. Second, from a political standpoint, the state's "monopoly on the legitimate use of physical force in the region it is considered to rule" depends greatly on the state's road system and the accessibility of remote rural areas (Herbst 2000). From

this point of view, it is argued that the construction of roads has played a significant role in the consolidation of the Ethiopian state since its very beginning (Clapham 2002).

Third, from a development perspective, road infrastructure constitutes a precondition and decisive factor for development and has therefore to be provided by the state. In fact, Ethiopia's road network has had significant strategic, political, economic, and social implications. The literature and documents on past road infrastructure generally draw a clear line between different emperors' and regimes' intentions to construct highways. Yet, the significance of roads can rarely be limited to one single feature for the era concerned but reveals the discursive justification of its creation for the regime concerned. Point of view, it is argued that the construction of roads has played a significant role in the consolidation of the Ethiopian state since its very beginning (Clapham 2002).

A project is a temporary endeavor created to produce a unique product, service, or result. Projects are typically defined by a set of criteria including scope, objectives, resources, quality measures and timelines. Project activities generally involve different disciplines collaborating to reach a common goal ((AMERICAN National Standard ANSI/PMI99-001-2004)).

Project management is the planning, execution and monitoring of project activities to meet project objectives, achieved by effectively controlling and balancing the constraints of scope, schedule and budget (Peng et al., 2007). The main purpose is to produce quality deliverables that meet or exceed the expectations of the project stakeholders. The temporary nature of projects contrasts with processes, or operations, which are permanent or semi-permanent, and considered as on-going functional work to create the effective product or service. According to Kerzner (2014), lead to improved company value, better benefit management activities, and greater benefit realization. Furthermore Cooke-Davies et al. (2009) argue that the value of project management is a function of what is implemented and how well it fits the organizational context. To ensure project success, project management procedures are necessary (Badewi, 2016).

This academic thesis was to assess Core Consulting Engineers' project management practice. The Core Consulting Engineers is a Consulting Company which has been in business since September 2004, registered with both the Ministry of Urban Development and Construction and Ministry of Water and Energy (Category I) and ISO certified company 9001:2008. It specializes

in the design and supervision of infrastructures including but not limited to highways, bridges, irrigation, water supply, dams etc. and has Certificate of Competence as Consultant in an Environmental Impact Assessment Studies as an Environmental Engineering Expert in Category Level 1. In addition, having getting in the International Market, Core Consulting Engineers Plc. is working in Tanzania. Core's mission is to provide Innovative, Economical, Sustainable as well as Contextual Civil and Environmental Engineering solution to the Government, Non-Governmental, Private sectors, and the international market maximum satisfaction.

1.2 Statement of the problem

Particularly in developing nations, a lack of competent PM methods contributes to low productivity and subpar job quality. Despite the professional project management discipline's expansion, there are still significant challenges in using efficient project management methods. Professional PM Techniques were defined by Kissi and Ansah(2015) as the knowledge and methods for organizing, coordinating, and controlling project-related tasks. Many projects being run in various sectors of an economy can benefit from using PM practices. According to Wakjira (2011), the construction industry is one of the most significant industries, with a variety of projects that support Ethiopia's political, economic, social, and technological advancement. According to Othman (2015), poor PM results in inefficiencies including building delays and increased expenses.

Since 2009 (GC), the sector has experienced considerable growth in Ethiopia. According to a study by Zewdu and Aregaw (2015), the sector's GDP contribution has increased to 5.6% and is already approaching the sub-Saharan region's average (6%). Despite its considerable economic contribution to Ethiopia's economy, the construction sector still faces numerous difficulties in its daily operations, which could lead to project failure. Project schedule overruns, project expense overruns, poor quality of project deliverables, inability to meet project criteria, and difficulty to implement best practices are a few of these issues (Zewdu, 2015; Abraham, 2008).

One major issue with Ethiopian construction projects that hurts the intended economic development is the huge delay of infrastructure and construction projects (ECIDP, 2014; LiYin et al., 2006). According to Kassa's (2018) analysis, 88% of Ethiopia's road projects ran over budget and schedule. According to Singh's 2009 report, project cost overruns are a significant issue in

the construction sector of emerging nations like Ethiopia. According to Wakjira's (2011) analysis, cost overruns occurred on 80% of Ethiopian road construction projects. Project management practices are one of the many causes of project time overrun and expense overrun. According to Zewdu and Aregaw (2015), the cost, schedule, and quality of the project are all directly impacted by a project management practice failure or ambiguity. While the size of the impact varies from project to project, it has the potential to be enormous for megaprojects.

Many people think that by strictly carrying out the planning and execution phases of road projects, especially the planning and management stage of the projects, all these issues, which are thought to be the results of inadequate planning and management of the road projects, will be rectified. As a result, it is crucial to evaluate the project management and planning procedures used in road building projects in order to pinpoint their advantages and disadvantages with regard to achieving the goals they are intended to achieve. The Dembecha-Sekela road project, which is located in the northern part of Ethiopia, is the subject of this study. Its general goal is to evaluate the strengths and shortcomings of project management methods in road construction projects.

Projects must be finished on schedule, within budget, and with the required quality. However, due to ineffective planning, execution, regulating, and related processes, many projects take longer to finish, cost more than necessary, and some projects are cancelled. Only 8.25% of projects in Ethiopia, according to WerkuKoshe (2016) analysis on the country's construction industry, have reached their original intended completion dates. This investigation found that the remaining 91.75% fell behind schedule.

The assessment of Core Consulting Engineers' project management practices in Denebecha-Sekella is the main objective of this research. There is a data gap in Ethiopian project management practice when it comes to how many different project management approaches are accepted and used. The author's search for research addressing the consulting construction company in Ethiopia during the literature study was unsuccessful. The results of the assessment and the expected recommendations for project management best practices can assist the project owner and other stakeholders in improving project delivery and targeted goals.

Furthermore, it has not been fully explored how the complexity imposed by the diversity of the local cultural and environmental factors affects whether projects in Ethiopia succeed or fail. So, additional research is needed from both a theoretical and practical perspective to understand better the complex project management practice in Ethiopia.

1.3 Research Questions

- i. What are the project management techniques used by Core Consulting Engineers Plc?
- ii. How does the core consulting engineer's Plc manage the road project in-line with the ten-project management knowledge areas?
- iii. How successful was the Denbecha-Sekela project overall?

1.4 Objective of the study

1.4.1 General objective

The general objective of the study is to assess the project management practices of Core Consulting Engineer at Denbecha -Sekela road project.

1.4.2 Specific objective

Based on the general objective of the study and the research questions bellow, this study has the following specific objectives.

- i. To identify the Project Management Practices techniques used by Core Consulting Engineer Plc.
- ii. To assess project management practice in-line with the ten project management knowledge areas defined by Core Consulting Engineer Plc.
- iii. To examine project success of Denbecha-Sekela project.

1.5 Significance of the study

Studying project management practice of a company can provide insights into how the strategies and process development in that organization actually works. This is beneficial for enhancing current practices, identifying weaknesses and developing new ideas. This research project paper

will help in benchmarking best practices, emerging trends, and opportunities for improvement across same sector. This study aims to point out this weakness and thus improve the project management practice in order to benefit from the findings. Project managers and project teams who are involved in the planning, designing, implementation and control of Core Consulting Engineer Plc projects could make use of the obtained information of this study. Finally, it will also contribute for project management knowledge in that the research paper follows a different approach in categorizing the challenges with project management knowledge areas that can be used as a baseline for further study.

1.6 Scope of the study

The study only covers Core Consulting Engineer Plc's project management practice. Although there is different issues concerned project management practice this study focuses only on 10 knowledge areas of project management. Only one project from the organization is the subject of this research. Only those from the organization's head office, site engineers, and project managers who are actively participating in project Denbecha-Sekela will be selected by the respondents.

1.7 Organization of the study

The project work is organized into five chapters. Chapter one which is the introductory part presents background study, project description, statement of the problem, objectives of the study, research questions, scope, limitation and significance of the study. Chapter two comprises of literature review and quotes the various related works done in this area of study, take place about project process groups, project management success and all the important frame works and concepts. Chapter three which is the research methodology part covers research design, target population; sampling techniques, sample size and data collection tools. And chapter four which is data analysis and findings part reveals findings and analysis from both qualitative and quantitative data collected from the instruments are analyzed and described exhaustively. The last chapter, chapter five that is the summery finding, conclusion and recommendation part concludes and recommends.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Definition of project

A project is a temporary endeavor undertaken to create a unique product, service, or result. Projects are undertaken to fulfill objectives by producing deliverables. An objective is defined as an outcome toward which work is to be directed, a strategic position to be attained, a purpose to be achieved, a result to be obtained, a product to be produced, or a service to be performed. A deliverable is defined as any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project. Deliverables may be tangible or intangible. PMI (2017)

It is generally accepted that projects require a clear definition of goals for measuring success; appropriate resource allocation; good project management procedures; effective communication with stakeholders; management of risk; timely delivery of results; aligning project objectives with the strategic goals of the organization; involvement of relevant parties in decision-making processes etc. (Baccarini&Saraiva 2018).Projects also often involve some degree of uncertainty due to lack of definitive knowledge about events and outcomes (Arditi et al., 2004).This means that careful monitoring throughout the life cycle is necessary in order to effectively manage risk associated with changes in requirements or other factors. Recent trends have focused on agile project methodology which encourages quick iteration during development in response to feedback from stakeholders thus improving chances of long term success. Additionally, metrics based performance management can determine whether the desired outcomes are being achieved within the budget and timelines set forth for a particular project. The use of project portfolios allows organizations greater visibility into operations and helps them prioritize resources more efficiently so as to better meet organizational needs and maximize benefits from investments (Sheridan et al., 2015).

2.1.2 Definition of project management

According to PMBOK (PMI, 2017), managing projects means applying knowledge, skills, tools and techniques to the project in order to meet its requirements. Project management, defined as "the planning, organizing and managing of the resources to achieve specific goals and objectives within a certain time frame", is essential for any organization (Chrestman, 2019). In addition (Kerzner, 2014) project management has evolved from a management philosophy restricted to a few functional areas and regarded as something nice to have to an enterprise project management system affecting every functional unit of the company. Simply stated, project management has evolved into a business process rather than merely a project management process. Likewise, according Clark (2016) it is a critical component of effective decision-making, team working and problem solving which can lead to improved organizational outcomes. Similarly, Schwalbe (2018) argued that successful project management can be the difference between achieving desired results on time and going over budget.

In recent years the importance of project management has been recognized in many industries where its systematic approach is used for better productivity and profitability. Several studies have highlighted important success factors for any successful project such as; effective communication between team members, effective use of skillsets available within the team, proper utilization of resources (time/money), proper risk assessment during each phase of a project and timely delivery within given budget constraints (Huhng et al., 2012). Furthermore, due to increasing need for swift response to changing business environment most organizations recognize the importance of having well managed projects with continuous evaluation throughout its life cycle (Matos 2010).

According to PMI (2017) Effective and efficient project management should be considered a strategic competency within organizations. It enables organizations to:

- ✓ Tie project results to business goals,
- ✓ Compete more effectively in their markets,
- ✓ Sustain the organization, and
- ✓ Respond to the impact of business environment changes on projects by appropriately adjusting project management plans

Depending on Ungureanu (2014) Project management methodology is a strictly defined combination on practices regarding logic, methods and processes that determine how best to plan, develop and control a project along the continuous process of its implementation and successful completion.

2.1.3 Project management knowledge areas

Project management is one of the very crucial and vastly interdisciplinary shoots of management sciences (Mahmoudi et al., 2019b). Projects, the central theme of project management, imply temporary organizations (or, initiatives) that are usually unique, time-constrained and dependent on temporarily available people (Bourgault et al., 2008; Hietajärvi, 2018). Project Management Knowledge Areas (PMKAs) are the knowledge areas within project management philosophy identified by the PMBOK Guide, an authoritative publication by Project Management Institute, USA.

There are ten PMKAs so far identified by the Guide. This guide and the knowledge areas are guiding the project managers around the world since years. As per ProjectManagement Institute, (2013), the PMKAs are:

(1) Project Integration Management

Within the project management process groups, project integration management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and activities in project. The project integration management processes include the following.

(i) Develop Project Charter: The processes of developing a formally authorizes the existence of a project and provides the authority to apply organizational resources to project (Sabyasachi, 2017). A project charter cannot be considered as a contract, because it does not consider or money promised or exchanged in its creation. Hayes (2000) evaluated the completeness and effectiveness of a project charter template as a project management tool. An information system development project charter was developed and initiated by a hospital-based clinical laboratory.

(ii) Develop Project Management Plan: The process of documenting the action necessary to define, prepare, integrate, and coordinate all subsidiary plans into a comprehensive project management plan.

(iii) Direct and Management Project Work: The process of leading and performing the work as defined in the project management plan and to achieve the projects objectives.

(iv) Monitor Integrated Change Control: The process of tracking, reviewing, and reporting project progress to meet the performance objectives defined in the project management plan. Conforto and Amaral (2010) developed and implemented agile project management principles by a qualitative evaluation which was carried out by a document analysis and questionnaire application. The investigation was carried out in two technology-based companies of the Sao Carlos technological pole in Brazil. Results revealed that there are benefits of using simple, iterative, visual, and agile techniques to plan and control innovative product projects combined with traditional project management best practices.

(v) Perform Integrated Change Control: It is the process of reviewing all change requests, approving changes and managing changes to deliverables, organizational process assets, and project. Aubry, Hobbs, Muller and Blomquist(2010) stated that project management offices are dynamic and in transition from one charter and structure to thenext. They presented empirical results on the nature and reasons for such transition project management offices.They proposed a process view on the transformation of the project management offices as being triggered by conditions which will produce outcomes in terms of impacts from the transformation. They collected the data by global web based questionnaire on project management offices transitions and got 184 responses. Factor analysis and correlation analyses has been conducted and results revealed that the transition of a project management offices from one configuration to the next is due to a multilevel dynamic process anchored in a specific organizational context change.

VI. Close Project/Phase: The process of finalizing all activities across all the project management process groups to formally complete the project/phase.

(2) Project Scope Management

It includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully and it is primarily concerned with defining and controlling what is and is not included in the project.

(i) Plan Scope Management: The process of developing documents that will define, validate, and control the project scope and it also provides guidance and direction on how scope will be managed.

(ii) Collect Requirements: The process of determining, documenting, and managing stakeholder needs and requirements to meet the project objectives. This process also provides the basis for defining and managing the project scope and product scope.

(iii) Define Scope: It is a process of developing a detailed description of the project and product i.e., the project, service, or result boundaries.

(iv) Create Work Breakdown Structure: The process of subdividing project deliverables and project work into smaller, more manageable components and provides a structured vision of what has to be delivered.

(v) Validate Scope: The process of formalizing acceptance of the completed project deliverables activities and bringing objectivity to the acceptance process and increases the chance of final product, service, or result acceptance by validating each deliverable.

(vi) Control Scope: The process of monitoring the status of the project, product scope and managing changes to the scope baseline and baseline to be maintained throughout the project.

(3) Project Time Management

It includes the processes required to accomplish the timely completion of the project.

(i) Plan Schedule Management: The process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, controlling the project schedule, guidance, and direction on how the project schedule will be managed in project.

(ii) Define Activities: The process of identifying and documenting the specific actions to produce the project deliverables and work packages are break down into activities that provide a basis for estimating, scheduling, executing, monitoring, and controlling the project work. Abbasi and Arabiat (2001) conducted the research to schedule project activities based on maximum net present value and minimum duration. They combined minimum late start and shortest processing time priority-rules and a new hybrid heuristics was developed. Analysis of the newly developed late start and shortest processing time heuristic was done by using sixty problems of the Patterson set and results were compared with four different heuristics. Statistical analysis results revealed that the late start and shortest processing time heuristic developed produced a higher net present value when comparing its mean with the other four heuristics. They mentioned that even different heuristics project duration results are same then also the late start and shortest processing time gives higher net present value. Late start and shortest processing time procedure tends to minimize the project time which helps to meet the project due date and avoids delay costs, and results in maximizing the net present value. Late start and shortest processing time heuristic can be used in project scheduling with constrained resources.

(iii) Sequence Activities: The process of identifying and documenting relationships among the project activities and defining the logical sequence of work to obtain the greatest efficiency.

(iv) Estimate Activity Resources: The process of estimating the type and quantities, descriptions of resources, equipment/supplies required to complete the activity which allows more accurate cost and duration estimates for the project.

(v) Estimate Activity Durations: The process of approximating the amount of time needed to complete individual activities with estimated resources, which is a major input into the develop schedule process in the project.

(vi) Develop Schedule: The process of analyzing activity sequences, durations, resource availabilities, and schedule constraints to generate the project schedule model for completing project activities. Vanhoucke, Vereecke, and Gemmel (2005) stated the project scheduling game is based on information technology supported simulation in which they explain the complexity of scheduling sequences of activities for real-life projects. By focusing on project scheduling game they explained how it supported the realization of a massive water purification project at a Belgium water distribution company, Vlaamse Maatschappij voor Watervoorziening. During examination of the project, they used basic approach a critical path method network problem and analyzed the time and cost relationship for each activity performed during this project.

(vii) Control Schedule: The process of monitoring the status of project activities to update and managing changes to the schedule baseline to achieve the plan and to recognize deviation from the plan and take corrective and preventive actions and thus minimize risk.

(4) Project Cost Management

It includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget.

(i) Plan Cost Management: The process of establishing the policies, procedures, and documentation for planning, managing, expending, and controlling project costs throughout the project.

(ii) Estimate Costs: The process of developing an estimating of the monetary resources needed to complete project activities. Eden, Ackermann, and Williams (2005) discussed about massive cost overruns in public construction projects such as airports, bridges, or public buildings and stated that large overruns also exist in private industry. In their study they considered industrial projects that overrun is well beyond what might ever have been anticipated and overrun in a

surprising manner. The analysis many large projects particularly “delay and disruption” claims for projects to understand why and how projects go badly wrong, when they do, and concluded that project managers are just the responsible for cost escalation in projects.

(iii) Determine Budget: It is the process of aggregating the approximated costs of individual activities or work packages to establish an authorized cost baseline against which project performance can be monitored and controlled. Haga and Marold (2004) stated that the traditional method of crashing project evaluation and review technique networks ignores the stochastic nature of activity completion times, reducing the stochastic model to a deterministic critical path method model and simply using activity time means in calculations. In a traditional method the project is arbitrarily crashed to desired completion date, without consideration for the penalty for late completion of the project and ignoring that reducing activity times may reduce the mean project completion time. To solve such problem they used a computer simulation model for three extreme network types, each with two different penalty functions to crash the activities in order and made optimal crashing strategy for a project evaluation review technique network to minimize the total cost by giving a specified penalty for late completion of the project.

(iv) Control Costs: The process of monitoring the status of the project to update the project costs and managing changes to the cost baseline and provides the means to know variance from the plan in order to take corrective action and minimize risk. Miranda and Abran (2008) stated that when a project in progress has been underestimated, it is important to estimate how much extra effort is needed to finish it within its original scope and delivery date. According to them project contingencies should be based on the amount it will take to recover from the underestimation and further they developed a model to calculate the required costs.

(5) Project Quality Management

It includes the processes and activities of the performing organization that determine quality policies, objectives, procedures to implement, and responsibilities within the project’s context and to supports continuous process improvement activities as undertaken on behalf of the performing organization. Quality management processes ensure that the project and product requirements are met and validated.

(i) Plan Quality Management: The process of identifying quality requirements and/or standards for the project, product and documenting how the project will demonstrate compliance with quality requirements and to manage and validate throughout the project. Kuprenas, Kendall and

Madjidi (1999) stated that production of spacecraft components systems are complex and costly to build. After launching a spacecraft it is extremely difficult and expensive to repair. In this regard, strict standards for quality and reliability are important. A case study was conducted on project quality management for the production of spacecraft printed circuit board electronics components as part of an overall spacecraft project.

Pareto analysis was used for printed circuit board data investigation by project managers for different defect types to solve process problems. Corrective actions to the spacecraft printed circuit board production process and ideas to improve future quality management studies were discussed.

(ii) Perform Quality Assurance: The process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality standards and operational definitions are used and it facilitates the improvement of quality processes. Gupta and Graham (1997) stated that quality management mechanism is more productive and meets customers' needs more effectively. They addressed the quality management issues by taking a case study on the quality management approach of Diamond Offshore Drilling, Inc. a project-driven organization, which is one of the largest offshore oil-drilling companies in the world. They also discussed initiation, implementation and post implementation in management systems program by emphasizing the continuous improvement of industrial safety, natural environment, maintenance, training, equipment upgrades and customer satisfaction.

(iii) Control Quality: The process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes by identifying the causes of poor process or product quality and recommending and/or taking action to eliminate them; and validating that project deliverables specified by key stakeholders for final acceptance. According to Rever (2007) project quality management is a vital aspect of any project and every project measure should have either a run chart or control chart, answer the question, "How are we doing over time?", Pareto charts are the appropriate tool for categories of information; answer the question, "What things are impacting the key metric?", scatter plots are the appropriate tool to visually show if there is a correlation between two variables.

(6) Project Human Resource Management

It includes the processes that organize, manage, and lead the project team. Project team members may also be referred as the project's staff consisting of the people with assigned specific roles

and responsibilities for completing the project. Team members may have varied skill sets, may be assigned full or part-time, and may be added or removed from the team as the project progresses. Participation of team members during planning and decision making adds their expertise to the process and strengthens their commitment to the project.

(i) Plan Human Resource Management: The process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan. It establishes project roles and responsibilities, project organization charts, and the staffing management plan including the timetable for staff acquisition and release. According to Dainty, Raiden, and Neale (2009) the human resource management practices form the key components of the resourcing process. Employee resourcing is the process for the strategic and operational matching needs of the organization. They examined the human resource management practices which are the key components i.e., inter alia, human resource planning, recruitment and selection, team deployment, performance management, and human resource administration of the resourcing process by taking real case study of seven leading construction firms, which faced dynamic resourcing priorities. Semi structured interviews methodology was used with senior executives, human resource management, operational and project-based managers and staff. Based on a practices extracted from the case study, an approach to project resourcing was developed to balance organizational, project, and individual employee requirements.

(ii) Acquire Project Team: The process of confirming human resource availability and obtaining the team necessary to complete project activities and outlining, guiding the team selection and responsibility assignment to obtain a successful team.

(iii) Develop Project Team: The process of improving competencies, team member interaction, improved teamwork, enhanced people skills, motivated employees, reduced staff turnover rates, and improved overall project performance to enhance project performance.

(iv) Manage Project Team: The process of tracking team member performance, providing feedback, manages conflict, resolving issues, managing changes and appraises team member performance to optimize project performance. Jetu, Riedl, and Roithmayr (2011) explored the cultural patterns influencing human element for project success. They conducted a case study on Ethiopia's service sector to understand the influence of cultural patterns within Sub-Saharan Africa project environments and investigated the deep-rooted underlying cause's related to Ethiopian cultural habits in project team behaviour.

(7) Project Communications Management

It includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information. Project managers communicate with team members and other project stakeholders, whether they are internal or external to the organization, which impact or have an influence upon the project execution or outcome.

(i) Plan Communications Management:

The process of developing, identifying and documenting an approach and plan for project communications most effectively and efficiently based on stakeholder's information needs and requirements, and available organizational assets. Abdomerovic, Blakemore, and Stewart (2000) stated that project management reports must be simple and useful. The communications planning process can be complex to create the reports depending upon the project data structures. Their research paper recommended that how multiple datastructures are related to make a report structure. By interfacing data structures with project scope will create simple report structures. They identified the project management information needs and information sources for making the report structure. By analyzing the reports results of construction projects and answers to, who needs what information?

(ii) Manage Communications: The process of creating, collecting, distributing, storing, retrieving and the ultimate disposition of project information with efficient and effective communications flow between project stakeholders in accordance with the communications management plan. Hossain and Kuti (2008) study hypothesized that change to interconnectedness of network nodes have implications to coordinate. To validate the hypotheses, they investigated survey data by performing macro agency based and micro cross agency analysis and identified attributes of each network and coordination.

(iii) Control Communications: The process of monitoring and controlling communications, optimal information flow throughout the entire project life cycle to ensure the information needs of the project stakeholders are met at any moment in time. Dietrich, Eskerod, Dalcher, and Sandhawalia (2010) stated that in many project based industries, collaboration and cocreation of value with the customers were increasing apart from inherent challenges and complexities related to multi-partner collaboration. They developed a conceptual framework which explains the focal collaboration elements based on knowledge integration, project success and their

interdependencies in multipartner projects. They identified 8 collaboration antecedents and three collaboration outcome elements and 15 mechanisms that enhance the project collaboration quality in multi-partner projects. They provided the concepts of project collaboration quality, knowledge integration capability and its role in collaborative projects.

(8) Project Risk Management

It includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project by increasing the impact of positive events, and decreasing the impact of negative events in the project.

(i) Plan Risk Management: The process of defining how to conduct risk management activities for a project. Risk management plan is important to communicate with and obtain agreement and support from all stakeholders to ensure the risk management plan performed effectively over the project life cycle.

(ii) Identify Risks: The process of documentation of existing risks, determining which risks may affect the project, documenting their characteristics and the knowledge and ability it provides to the project team to anticipate events.

(iii) Perform Qualitative Risk Analysis: The process of short listing risks for further analysis or action by assessing and combining their probability of occurrence and impact on the project. It enables project managers to reduce the level of uncertainty and to focus on high-priority risks.

(iv) Perform Quantitative Risk Analysis: The process of quantitative risk information analyzing in order to reduce project uncertainty on overall project objectives. Krane, Rolstadas, and Olsson (2010) stated that in project objectives, operational objectives are related to the project results and strategic objectives are concern with the project goal and purpose. Therefore, strategic objectives will be different from operational objectives in hierarchy of project objectives. In their study they categorized risks as risks to operational, long-term, or short-term strategic objectives, and studied about 1,450 risk elements of 7 large projects, and investigated how operational and strategic risks are distributed in the projects. The study results indicated that risks to a project's strategic objectives rarely occur in the project's risk registers.

(v) Plan Risk Responses: The process of developing alternatives, addressing the risks by their priority, inserting resources, activities into the budget, schedule and plan as needed and to reduce threats to project objectives.

(vi) Control Risks: The process of improving efficiency of the risk approach throughout the project life cycle, implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness to continuously optimize risk responses throughout the project. Taylor (2006) reported findings from an exploratory field study of risk management and problem resolution strategies used by project managers working for local and multinational information projects in Hong Kong. They discussed about general strategies within categories of control, negotiation, research, and monitoring related to their projects.

Findings suggested that practical alternative to traditional formal prescriptions may be needed in managing high uncertain situations with limited resources by project managers.

(9) Project Procurement Management

It includes the processes essential to contract management and change control and administers contracts or purchase orders or acquires products, services, or results needed from outside the project team members. The organization can be either the buyer or seller of the products, services, or results of a project. Procurement management also includes controlling any contract issued by an outside organization that is acquiring deliverables from the project from the performing organization and administering contractual obligations placed on the project team by the contract.

(i) Plan Procurement Management: The process of documenting project procurement decisions, specifying the approach, and identifying potential sellers, in other words whether to acquire by outside support, and if so, what to acquire, how to acquire it, amount needed, and time to acquire it. Bevilacqua, Ciarapica, and Giacchetta (2008) applied value stream mapping to analyze and redesign for managing the materials procurement stage of a project.

Integrated definition, stream analysis approach, activity-based costing, and discrete event simulation methodology was applied to a company specialized in engineering, procurement, and construction projects and whose core business is the design and construction of offshore oil rigs. Such projects have common features of design and components, and are characterized by a short “time to delivery.” Their study assessed the possible effects of new materials management policies on reducing project completion time and the resources required.

(ii) Conduct Procurements: The process of obtaining seller responses, selecting a seller, and awarding a contract with alignment of internal and external stakeholder expectations through established agreements.

(iii) Control Procurements: The process of managing sellers and buyers relationships, monitoring contract performance, and making changes and corrections as appropriate according to the terms of the legal agreement.

Rose and Manley (2010) stated that the construction customers use financial incentives to attract stakeholder motivation for high order project goals. By using case study methodology they examined Australian construction project and studied procurement approach that promotes the effectiveness of financial incentives. To positively motivate the contractors without manipulate incentive system should be fair and reward should be given to exceptional performance.

(iv) Close Procurements: The process of closing each project procurement by making agreements and related documentation for future reference.

(10) Project Stakeholder Management

It includes the processes required to identify the human resources or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and continuous communication with stakeholders to understand their needs and expectations, addressing issues, managing conflicting, to develop appropriate management strategies for effectively engaging stakeholders in project decisions, activities and execution.

(i) Identify Stakeholders: The process of identifying the human resources or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success. It allows the project manager to identify the appropriate focus for each stakeholder or group of stakeholders.

(ii) Plan Stakeholder Management: The process of developing appropriate management strategies to engage project stakeholders throughout the project, based on their needs, interests, and potential impact on project success.

(iii) Manage Stakeholder Engagement: The process of communicating and working with stakeholders to meet their needs/expectations, address issues, and foster appropriate stakeholder engagement in project activities throughout the project. It allows the project manager to increase

support and minimize resistance from stakeholders, significantly increasing the chances to achieve project success.

(iv) Control Stakeholder Engagement: The process of monitoring overall project stakeholder relationships and adjusting strategies plans for engaging project stakeholders to maintain or increase the efficiency and effectiveness as the project evolves and its environment changes.

2.1.4 Project success and failure

2.1.4.1 Project success

The concept of project success is vast and multidimensional, and throughout the past few decades, researchers have researched it in great detail. The definition of project success is discussed in this literature review. Morteza and Kamyar (2009) noted that there are a wide range of definitions of the term “Success”. Success is perceived differently by different stakeholders. It plays out in various ways across states, communities, and population subgroups since there is a large diversity of people with different ideas. Dvir et al. (2003) believe that a project is deemed successful when it meets budget and schedule constraints even though it may not have met factors such as customer needs or achieved a quality commercialization process of the final product.

There are three factors influencing the current success of projects: applied methods, people in projects and organizational context. (Spalek, 2014). One of the most common challenges in project management is determining whether or not a project is successful. Project stakeholders may have different ideas as to what the successful completion of a project will look like and which factors are the most important (PMI 2017).

From the project management perspective, success means the delivery of the project within the deadlines, budgets and its functionality fulfills the mission and the planned objectives and meets the required expectation of the stakeholder’s (El-sokhn. And Othman, 2014).

2.1.4.2 Project failure

Project failure is defined differently by different authors without changing the fundamental meaning. Some authors hold the belief that a project fails when it is not implemented well, while others go beyond and factor in user satisfaction and business benefits when making their decision. Project failure is usually a result of inadequate planning and project financing,

bankruptcy of contractors or other problems associated with sub-contractors, project scope variations, political influences, incompetent personnel and delays in payments. El-sokhn. and Othman (2014).

2.2 Empirical literature review

This part of literature review will discuss related articles and related to the topic under study. Abdulrahman B. (2019) conducted a study titled Project Management: The Implication of Project Management Practices on Project Success in Saudi Arabia use a cross-sectional approach, as indicated by the survey design method, to collect quantitative data. The Contracting Committee of the Riyadh Chamber of Commerce submitted a list of contracting companies from which the sample was selected. Percentages, means, and standard deviations were used to interpret the data after being analyzed in SPSS. The findings of this study give insight on Saudi Arabian project managers' perspectives and ideas. Project management practice includes several tools used by both project managers and the organizations they hired. Based on the results of the interviews, many of the project managers who were targeted are aware of project management practice and are familiar with the necessary terminologies used in project management tools and procedures. Although not all conceivable project management techniques were stated by name during the interviews, the project managers use some that they did not mention, so there is a perception that they have become familiar to them.

There was also a study conducted to find out the effect of project management practices on building project performance: the case of three organizations by Sarfo (2007). The researcher's results showed that the time, cost, and quality performance of the projects within each organization were evaluated in order to determine the trend of project performance. Out of the 66 projects that the organizations provided, 87.9% had time performance problems and were delivered ahead of schedule. Also, although 50.1% of the projects performed below trend, they were completed above budget. Only 15.2% of the projects performed below trend in terms of quality. The general quality of the projects was determined to have a good level of satisfaction. Furthermore, not all major project management practices are associated with projects within "Company A" performing cost effectively. However, it was observed that all significant project management practices occurring within "Organization B" as well as the cost performance of the relating projects showed a positive relationship. In comparison, only one significant project

management practice occurring within "Organization C" has been found to have a negative relationship with the cost performance of the relating projects. Each project management approach that had a significant impact on the amount of every project cost varied from organization to organization.

One empirical study that supports the project management practice is titled "The Practice and Challenges of Project Management at Addis Ababa City Road Authority: The Case of the Betel-Augusta Road Project" (2020). The start meeting occurred at the right moment, and the project management procedure used during the start of the project, or the initiation phase, had the good fortune of defining the project's objectives in a simple, unambiguous, and comprehensive statement. The study also found that there is a chance of determining the project's overall the timeline and budget; the project schedule is regularly updated, incorporating unplanned work as needed; effective team meetings are held with a stated agenda; performance reports are made for every activity in according to plan; quality assurance and scope verifications are properly made; and the overall change is controlled to provide an appropriate time.

HailuGebregziabher (2019) addresses the Ethiopian Electric Power Company's project management practices in regard to the Universal Electricity Access Program (UEAP). The agreement between UEAP and KBC has a two-year completion time and was signed in December 2010. The project's term has been repeatedly increased, and seven years after the initial closing date, it is still in force. This shows a high degree of timeline delay, showing that initial project planning was weak. The project supervisory staff of the project owner, UEAP, observed numerous unfair and corrupt behavior in addition to repeated delays in payments for finished work. As a result, he strongly advised the enterprise to take the following issues into serious consideration: the availability of organization software, training as well as capacity-building applications on software use and adaptation, and systems for performance management, budget cost, and benefit achievement.

2.3 Conceptual framework

This study proposes a conceptual framework that emphasizes the practices related to knowledge areas in project management. According to PMBOK (2017), knowledge areas represent a range of knowledge required in the field of project management. It is essential to keep up with the latest knowledge areas and practices in project management to ensure successful project completion.

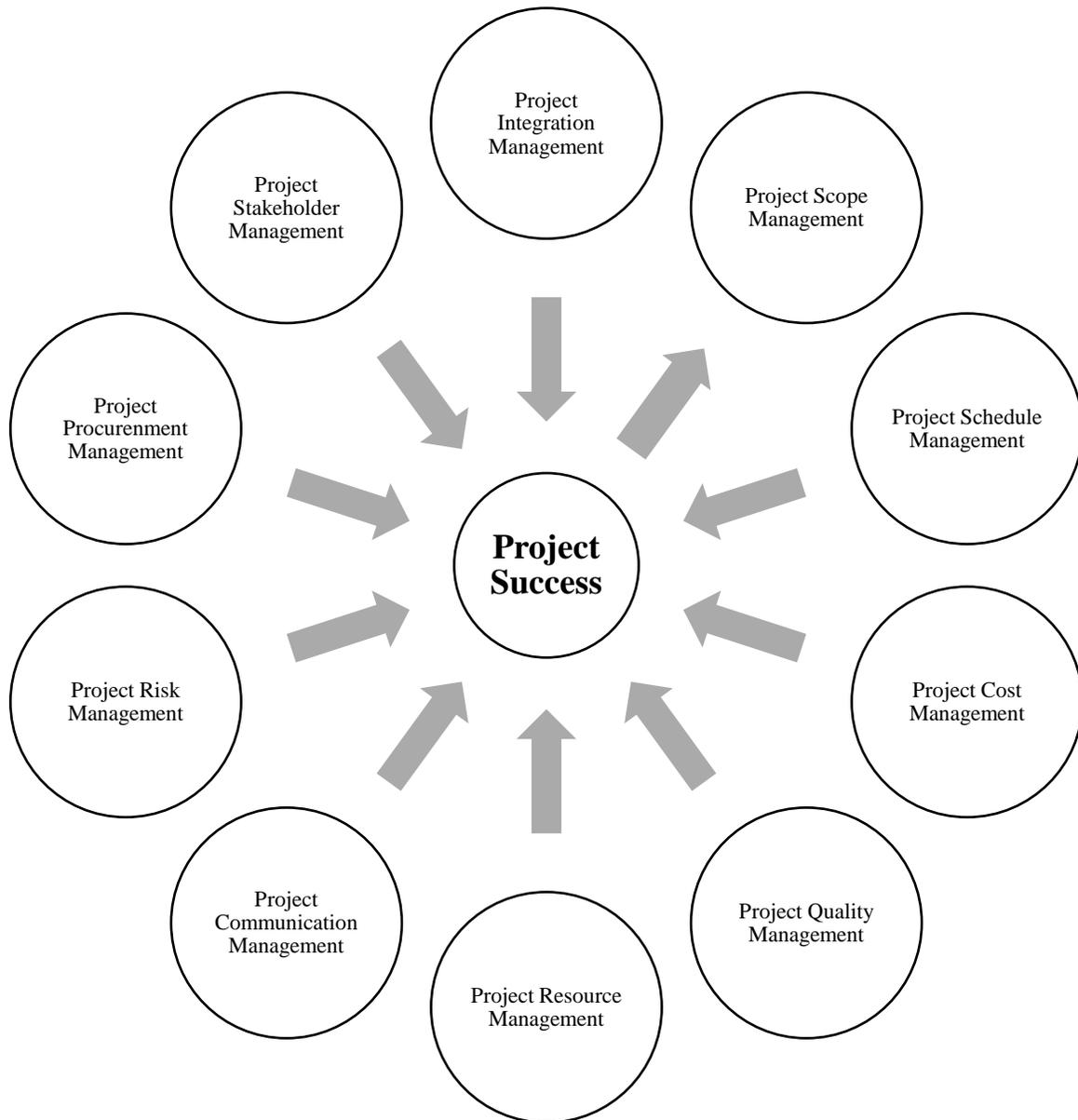


Figure 2.1. Conceptual framework

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

Research design is the plan and structure of an investigation so conceived as to obtain answers to research questions (Cooper & Schindler, 2014). The researcher used a descriptive research design to describe or assess the project management practices of Core Consulting Engineers plc.

This research was used a quantitative research approach, which is suitable to study complex research problems that cannot be explored in isolation from their human and social contexts (Creswell, 2013). Quantitative methods involves questionnaire both open and close ended questions. The research approach was selected based on the research purpose, the nature of the research, the problem area, and the research question (Creswell, 2003). This type of research provides thorough details on a specific project and can produce suggestions that can be tested in additional studies.

3.2 Research Approach

This study aims to evaluate Core Consulting Engineers plc's project management practice. A diverse approach would have taken in the research. A cross-sectional case investigation would conducted as part of the research to collect the data one piece at a time. The study was conducted utilizing a range of research methodologies. The strategies used to obtain quantitative data include closed-ended questions as well as the gathering, analyzing, and interpretation of statistical data. Quantitative research is adaptable in that it can be used to fill in the gaps of what is unknown or only partially known, claim Ghauri and Grønhaug (2005). It also helps in gaining understanding of the phenomenon being researched.

3.3 Population and Sample Size Determination

3.3.1 Population

The demographic of interest was Core Consulting Engineers plc employees, and the study was include participants from project management department or Denbecha-Sekela road project. The company's top, middle, and lower management levels as well as employees from chosen project

was all take part in the study. The respondents at lower levels included other support staff whose routine tasks are affected by project management techniques.

3.3.2 Sample Size Determination

A sample size of respondents would have chosen from the population of employees, including staff and management, at Core Consulting Engineers plc since researching a subset of the population would be more manageable in size than studying the complete population due to time, expense, and accessibility. The sample was drawn using simple random sampling technique from the organization's total population of employees. The sample size would have chosen to correctly represent the entire population.

3.4 Data Gathering Tools

The primary approach or instrument for gathering data was a questionnaire. The company's work processes, regulations, procedures, forms, and other documents that are linked to project management practice would also used as a source for the secondary data. The primary data was be gathered through a questionnaire. There are both closed-ended and open-ended questions. According to Kothari (2004), this method of data collection is very typical, particularly in large investigations.

3.5 Methods of Data Analysis

Before being analyzed with SPSS software, the gathered data was arranged and encoded. To present the findings from descriptive statistics like mean, standard deviation, frequency, and percentage, charts, tables, graphs, and text presentations was used.

3.6 Validity and Reliability of the study

The researcher typically serves as the instrument for data collection in quantitative research. As a result, if issues with researcher bias and competence are not addressed, it could have a significant impact on the validity of the findings. The dependability of the information provided by the respondent might be impacted even by a researcher's mere presence. If the researcher is present, participants might exaggerate certain details. To address this issue, the researcher must encourage social activity in others that would not otherwise take place. Because it is difficult to obtain training as a researcher or interviewer, the researcher was study extensively to prepare the

interview questions for qualitative investigations. This reduces the possibility of making errors at different stages of the research process.

A reliability evaluation using Cronbach’s Alpha was carried out on the SPSS 25 to assess the internal consistency of the Likert scale type questions. Cronbach’s alpha is a statistical measure that determines the reliability of test or scale items by evaluating their consistency over time and across various items. It indicates the degree to which the instrument is free from errors or biases. As per Sekeran's definition in 2003 higher value of Cronbach's alpha, close to 1, signifies better reliability of the instrument.

Table 3.1 Reliability statistics

No.	Variables	Cronbach’s Alpha	No. of Items
1	Project Integration Management Practice	0.742	5
2	Project Scope Management Practice	0.763	5
3	Project Schedule Management Practice	0.660	4
4	Project Cost Management Practice	0.678	4
5	Project Quality Management Practice	0.854	4
6	Project Resource Management Practice	0.867	4
7	Project Communication Management Practice	0.745	4
8	Project Risk Management Practice	0.710	4
9	Project Procurement Management Practice	0.732	5
10	Project Stakeholders Management Practice	0.775	5

Source: own survey (2023)

3.7 Ethical consideration

In this study, ethical consideration has been used by preserving the confidentiality of data related to the respondents and organization. Also, the information gathered was only be used for this study and won't be discussed with or used for any other purposes. Also, the voluntary respondents' confidentiality and secrecy would have been preserved. The study has therefore taken into account all possible ethical perspectives.

In this study, a descriptive research design was used to explore and identify project management practices by assessing the maturity levels of project management practices in NGO projects as

well as the proper practicing of project management to achieve project success. (Calderon, 2006), defined descriptive research as a purposive process of gathering, analyzing, classifying, and tabulating data about prevailing conditions, practices, processes, trends, and cause-effect relationships and then making adequate and accurate interpretation about such data with or without or sometimes minimal aid of statistical methods. The choice of this methodology is intended to provide a more comprehensive explanation for the research topic, providing further details and improving understanding of the theme. This approach was provided an accurate enumeration and depict an assessment of project management practices. Collecting as much data as possible was be critical for later analysis, assessing the effectiveness of project management practices and allowing us to determine if it was correctly incorporated into the project.

CHAPTER FOUR

DISCUSSION AND RESULT

4.1 Response rate

In this chapter, data gathered through questionnaire are presented, analyzed and interpreted using percentages, frequencies, mean and standard deviation with the help of Statistical Package for Social Science (SPSS) version 25. To collect relevant data, 70 questionnaires were distributed to employees of core consulting engineers those who participated in Denbecha-Sekela project. Among the questionnaires distributed to employees the researcher collected 64 which accounts 92.5 % response rate, 6 of them were unfiled and not returned. This response rate was very good to make conclusions on the project management practices of core consulting engineers.

4.2 Demographic profile of respondents

The first section of the questionnaire consists of five items about demographic characteristics of the respondents such as: sex group of respondents, age group of respondents, job category of respondents, educational status of respondents and work experience of the respondents. The following table summarized the data pointed out from the respondents.

Table 4.1 Demographic profile of respondents

No	Item		Frequency	Percent
1	Sex of respondent	Male	44	67.7
		Female	21	32.3
		Total	65	100.0
2	Age of respondent	Below 30	28	43.1
		30-40	21	32.3
		40-50	16	24.6
		Total	65	100.0
3		Project coordinator	2	3.1

	Job category of respondent	Project manager	6	9.2
		Project member	22	33.8
		Support staff	35	53.8
		Total	65	100.0
4	Educational status of respondent	Diploma/TVT	8	12.3
		BA/BSC	42	64.6
		MA/MC	15	23.1
		Total	65	100.0
5	Work experience of respondent	0-5 years	27	41.5
		6-10 years	15	23.1
		11-15 years	21	32.3
		≥15 years	2	3.1
		Total	65	100.0

Source: own survey (2023)

As shown in the above table, Item No. 1 of the table represents Sex distribution of respondents. Accordingly, 44 (67.7%) of the respondents were male and the remaining 21(32.3 %) were females. Therefore, from the sampled respondents there are a greater proportion of male respondents than the female. Item No. 2 of the table represents Age of the respondents. Accordingly, 28 (43.1%) were below 30 years, 21 (32.3%) were between 30 and 40 years and 16 (24.6%) were between 40. This may infer that young aged employee were part in the project. Item No. 3 of the table represents Job category of the respondents. Accordingly, Majority of the respondents that is 35 (53.8%) were support staff, 22 (33.8%) were project team members, 6 (9.2%) project coordinator and 2 (3.1%) were project manager. Item No. 4 of the table represents educational status of respondents from college diploma complete to masters' degree. Accordingly, 42 (64.6%) hold BA/BSC degree, 15 (23.1%) hold master degree. While the

remaining 8 (12.3%) hold college diploma. Item No. 5 it can be seen that the work experience of the respondents. Among the total respondents 27 (41.5%) have less than 5 years' experience, 15 (23.1%) have between 6 and 10years' experience, 21 (32.3%) have between 11-15 years and 2 (3.1%) have more than 15 years' experience.

The researcher believed that respondents with high academic qualification and higher position tend to give more detailed information regarding the issues under study and give more weight to the opinion of the project management practice of the company.

4.3 Assessing project management practice based on project management knowledge areas

This portion of the chapter presents results of the data collected from respondents as follows. The criteria proposed by Scott (1999) have been used to interpret mean values. He proposed that the interpretation for the Likert type scale, which ranges from 1 (Strongly Disagree/Highly Dissatisfied) to 5 (Strongly Agree/Highly Satisfied), should be as follows: mean up to 2.8 is considered as Disagree, mean from 2.9 to 3.2 means neutral or neither disagree nor agree, and mean above 3.2 is considered as an agree.

On the Denbecha-Sekela project, which was undertaken by core consulting engineers, the research participants were asked what they observed about the project management practices used there. Responses on a 5-point Likert scale with 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree were presented to the responders. Using descriptive statistics like frequency, mean, percentage, and standard deviation, the study data was evaluated, as indicated in the table below.

4.3.1 Project integration management

Project Integration Management is a specific PMKA that is directly under the project manager's authority and is often not assigned to other project participants, according to the Project Management Institute (2017).

Table 4.2 Project integration management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1.	Project Manager was assigned early in the project	Frequency	14	30	12	9	0	0.952	3.75
		Percentage	21.5	46.2	18.5	13.8	0		
2.	There were efficient change managements	Frequency	6	18	29	10	2	0.935	3.25
		Percentage	9.2	27.7	44.6	15.4	3.1		
3.	Single and cohesive project management plan was developed	Frequency	5	24	23	12	1	0.917	3.31
		Percentage	7.7	36.9	35.4	18.5	1.5		
4.	Project was closed with in pre-scheduled time	Frequency	7	31	23	3	1	0.804	3.62
		Percentage	10.8	47.7	35.4	4.6	1.5		
5.	Proper monitoring and reporting scheme were placed and practiced	Frequency	12	17	16	19	1	1.131	3.31
		Percentage	18.5	26.2	24.6	29.2	1.5		
Average mean								3.44	

Source: own survey (2023)

The statement "Project Manager was assigned early in the project" has a mean value of 3.75 and a standard deviation of 0.952. These are derived from the percentage of respondents who strongly disagreed with the statement (21.5%), neutrally agreed with the statement (18.5%), agreed with the statement (46.2%), and disagreed with the statement (13.8%). It is unambiguous from the mean value that project managers were assigned early in the project.

According to the data gathered, 27.7% of respondents agreed, 9.2% said they were strongly agreed, 44.6% said they were neutral, 15.4% said they disagreed, and the remaining respondents said they strongly disagreed with the statement that the project's change management was effective. Then, using SPSS, a mean value of 3.25 and a standard deviation of 0.935 were generated. This mean indicates the project's change management procedures were effective.

Single and coherent project management plan was produced has a mean value of 3.31 and a standard deviation of 0.917. With 36.9% of respondents agreeing, 35.4% remaining neutral, and 18.5% disagreeing with the supplied statement, this was estimated using SPSS. A third of those

surveyed said their initiatives had a unified, well-organized project management plan. Therefore, it can be said that the majority of respondents think a single, comprehensive project management plan was created.

According to the data gathered, on the statement "Project was closed with in pre-scheduled time," 47.7% of the respondents agreed, 10.8% of the respondents S.A, 1.5% of the respondents S.D, 4.6% of the respondents disagree, and the remaining 35.4% are neutral. Then SPSS calculated the mean value and standard deviation, which were 3.62 and 0.804, respectively. Therefore, the project team had a good understanding of the statements that the project was completed within the predetermined time frame. This mean value also demonstrates that the project was completed on schedule.

According to the data gathered, 26.2% of respondents agreed, 18.5% disagreed, 1.5% disagreed strongly, 29.2% disagreed, and 24.6% were neutral about the statement proper monitoring and reporting system was implemented. Then, using SPSS, the mean value and standard deviation were calculated, showing up with 3.31 and 1.131, respectively. This mean number demonstrates the effectiveness of current monitoring and reporting procedures.

4.3.2 Project Scope Management

Project scope management, according to the Project Management Institute (2017), is the process of creating and putting into place the policies that ensure the project contains all of the activities necessary for its successful execution.

Table 4.3 Project scope management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1.	Requirements of the stakeholder's need was determined and documented	Frequency	3	17	23	15	7	1.057	2.91
		Percentage	4.6	26.2	35.4	23.1	10.8		
2.	Project scope statement that details project scope, boundaries, acceptance criteria and project exclusions were defined.	Frequency	4	7	20	27	7	1.017	2.46
		Percentage	6.2	10.8	30.8	41.5	10.8		
3.	Work Break Down (scope baseline) was created	Frequency	11	17	7	21	9	1.358	3.00
		Percentage	16.9	26.2	10.8	32.3	13.8		
4.	A plan that detail how the project scope will be defined, validated, and controlled was generated	Frequency	7	8	11	31	8	1.182	2.62
		Percentage	10.8	12.3	16.9	47.7	12.3		
5.	Scope validation (by the customer or the user) were done for each deliverable	Frequency	0	8	11	37	9	0.857	2.28
		Percentage	0	12.3	16.9	56.9	13.8		
Average mean								2.65	

Source: own survey (2023)

The mean value and standard deviation for the statement "Requirements of the stakeholder's need was determined and documented" are 2.91 and 1.057, respectively. These are determined from the proportion of respondents who strongly disagreed with the statement (10.8%), agreed with it (26.2%), were passive on the issue (35.4%), and disagreed with it (23.1%). The median number demonstrates that the stakeholder's requirements were identified and documented.

The survey results show that 10.8% of respondents agreed, 6.2% strongly agreed, 30.8% were neutral, 41.5% disagreed, and the remaining respondents strongly disagreed with a case that the project scope statement defines the project's scope, boundaries, acceptance criteria, and exclusions. Next, a mean value of 2.46 and a standard deviation of 1.017 were calculated using SPSS. This means that the project scope statement, which outlines the project's scope, bounds, acceptance standards, and project exclusions, was not sufficiently specified.

Work Break Down (scope baseline) was created has a mean value of 3.00 and a standard deviation of 1.358. This was evaluated using SPSS, with 26.2% of respondents agreeing, 10.8% remaining neutral, and 32.3% disagreeing with the provided statement. The majority of respondents therefore believe that Work Break Down (scope Baseline) was formed.

The data that was obtained confirms the statement that "A plan detail how the project scope will be defined, validated, and controlled was generated." 10.8% of respondents selected "S.A," 12.3% selected "Agreed," 47.7% selected "Disagree," 12.3% selected "S.D," and 16.9% selected "Neutral." Then, using SPSS, the mean value and standard deviation were calculated, giving out at 2.62 and 1.182, respectively. As a result, the project team had little information how the project scope would be defined, validated, and controlled. This mean value further demonstrates the lack of clarity in the scope.

The statement "Scope validation (by the customer or the user) were carried out for each deliverable" has a mean value and standard deviation of 2.28 and 0.857, respectively. These are calculated based on the percentage of respondents who agreed with it (12.3%), were uncommitted (16.9%), opposed it (56.9%), and strongly opposed it (13.8%). The mean figure shows that not every deliverable had its scope validated either by the customer or the user.

4.3.3 Project Schedule Management

A project schedule is a component of project management that analyzes and creates a precise timeline, offering a thorough plan of operations, delivery, and project milestones.

Table 4.4 Project schedule management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1.	List of activities to be executed were defined	Frequency	8	19	17	13	8	1.221	3.09
		Percentage	12.3	29.2	26.2	20.0	12.3		
2.	Activities were sequenced time required for each of activities were estimated	Frequency	3	24	26	12	0	0.82	3.28
		Percentage	4.6	36.9	40	18.5	0		
3.	Schedule management plan was developed	Frequency	5	19	35	6	0	0.759	3.35
		Percentage	7.7	29.2	53.8	9.2			
4.	Changes to the project schedule was controlled	Frequency	2	3	24	18	18	1.023	2.28
		Percentage	3.1	4.6	36.9	27.7	27.7		
Average mean								3.00	

Source: own survey (2023)

"List of activities to be conducted were defined" has a mean value of 3.09 and a standard deviation of 1.221. The percentage of respondents who disagreed with the statement (20.0%), were neutral on it (26.2%), agreed with it (29.2%), and strongly agreed with it (12.3%) was used to get these figures. According to the mean value, the respondents have certain concerns that are still unclear.

According to the data gathered, in the statement "Activities were sequenced and time required for each of the activities was estimated," 36.9% of respondents agreed, 4.6% strongly agreed, 40% were neutral, and 18.5% were in disagree. Then, using SPSS, a mean value of 3.28 and a standard deviation of 0.82 were produced, respectively. This mean number indicates that there was a time estimate and a sequence of activities.

The mean value for the statement, schedule management plan was developed are 3.35 and the standard deviation 0.759. This was calculated having 7.7% of respondents strongly agreed 29.2% agree, 53.8% staying neutral and 9.2 % of the respondent disagreed with the given statement. Depending the mean value, it can be determined that respondents think a schedule management plan has been developed.

According to the data gathered, 4.6% of respondents agreed, 3.1% of respondents strongly agreed, 27.7% of respondents disagreed, 27.7% of respondents strongly disagreed, and 36.9% of respondents were neutral to the statement changes to the project schedule was controlled. Then, the mean value and the standard deviation were, respectively, 2.28 and 1.023. This mean value clearly indicates the respondent did not believe the project changes were handled properly.

4.3.4 Project Cost Management

Project Management Institute (2017), project cost management includes planning and estimating costs, determining a budget, controlling costs, and auditing the costs.

Table 4.5 Project cost management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1.	Cost estimate in-line with agreed scope were made	Frequency	0	37	13	15	0	0.834	3.34
		Percentage	0	56.9	20	23.1	0		
2.	A budget, which is used as cost baseline, was determined	Frequency	3	10	22	18	12	1.101	2.6
		Percentage	4.6	15.4	33.8	27.7	18.5		
3.	A cost management plan that detail how the project budget is estimated and controlled was generated	Frequency	7	17	29	12	0	0.897	3.29
		Percentage	10.8	26.2	44.6	18.5	0		
4.	Change in project budget was controlled	Frequency	4	11	19	27	4	1.016	2.75
		Percentage	6.2	16.9	29.2	41.5	6.2		
Average mean								2.99	

Source: own survey (2023)

The data provided supports the statement that "cost estimates in line with agreed scope were made". 20% chose Neutral, 23.1% chose disagree, and 56.9% chose Agreed. The mean value and standard deviation were then calculated using SPSS, producing results of 3.34 and 0.834, respectively. The project team was therefore satisfied that the cost estimates were made in line with the established scope.

The mean value and standard deviation for the statement "A budget, which is used as cost baseline, was determined" are 2.6 and 1.101, respectively. These percentages were determined by the proportion of respondents, who strongly agreed (4.6%), agreed (15.4%), neutral (33.8%),

disagreed (27.7%), and strongly disagreed (18.5%). The mean value indicates that respondents lack confidence that the budget has been determined.

The information provided supports the statement that "A cost management plan detailing the estimation and control of the project budget was generated." 10.8% of respondents selected strongly agree, 26.2% selected agreed, 18.5% selected disagree and 44.6% neutral. The mean value and standard deviation returning results of 3.29 and 0.897 respectively. As a result, the project team thought a cost management plan had been created explaining how the project budget is determined and controlled.

The statement "Change in project budget was controlled" has a mean value and standard deviation of 2.75 and 1.016 respectively. These are calculated based on the percentage of respondents who strongly agreed with it (6.2%), agreed with it (16.9%), (29.2%) were neutral, disagree with it (41.5%), and strongly disagree with it (6.2%). The mean value indicates that respondents believe that project budget changes are under control.

4.3.5 Project Quality Management

Project, quality refers to both completing the technical requirements of the project and satisfying the demands and expectations of the client.

Table 4.6 Project quality management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1. 1.	Quality standards of the project were identified	Frequency	25	19	12	9	0	1.065	3.92
		Percentage	38.5	29.2	18.5	13.8	0		
2.	Quality standards of the project were reviewed	Frequency	11	27	15	11	1	1.016	3.55
		Percentage	16.9	41.5	23.1	16.9	1.5		
3.	Project performance were evaluated on regular basis	Frequency	11	13	13	24	4	1.23	3.05
		Percentage	16.9	20	20	36.9	6.2		
4.	Results were monitored to check if they comply with the quality standards identified	Frequency	11	16	22	16	0	1.035	3.35
		Percentage	16.9	24.6	33.8	24.6	0		
Average mean								3.46	

Source: own survey (2023)

As shown in the table above the quality standards of the project were identified was strongly agreed by 38.5% of respondents, 29.2% of respondents also agree, 18.5% of respondents kept neutral and 13.8% of respondents disagree about it the average mean of 3.92 implies that quality standards of the project were identified.

In response to the question that intended to know whether quality standards of the project were reviewed 16.9% of respondents strongly agreed, 41.5% of them agreed, 23.1% were neutral, 16.9% disagree and 1.5% strongly disagree an average mean of 3.55 shows that quality standards of the project.

Regarding whether project performance were evaluated on regular basis the above table shows that 16.9% of respondents strongly agree, 20% of respondents agree, 20% kept neutral 36.9% disagree and 6.2% strongly disagree. An average 3.05 shows that there was project performance were evaluated in regular basis.

The other on in the table results were monitored to check if they comply with the quality standards identified 16.9% of respondents strongly agree, 24.6% of respondents agree, 33.8% kept neutral and 24.6% disagree an average mean of 3.35 shows that results were monitored to check if they comply with the quality standards identified.

4.3.6 Project Resource Management

Resource management, according to the Project Management Institute (2017), entails estimating the amount of available resources, acquiring the resources required, developing team and individual competencies, team management, and resource control to ensure that all material resources are allocated and used as intended.

Table 4.7 Project resource management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1. 1.	Resources for each activity was estimated	Frequency	7	13	6	31	8	1.236	2.69
		Percentage	10.8	20	9.2	47.7	12.3		
2.	Acquiring project resources were made on time	Frequency	7	4	30	18	6	1.059	2.82
		Percentage	10.8	6.2	46.2	27.7	9.2		
3.	Project team was developed	Frequency	2	10	28	25	0	0.802	2.83
		Percentage	3.1	15.4	43.1	38.5	0		
4.	Project team was managed and controlled	Frequency	4	7	17	32	5	0.998	2.58
		Percentage	6.2	10.8	26.2	49.2	7.7		
Average mean								2.73	

Source: own survey (2023)

The data provided supports the statement that "resources for each activity were estimated". 9.2% selected neutral, 47.7% selected disagree, 12.3% selected strongly disagree, 20% selected agreed and 10.8% strongly agree. The mean value and standard deviation were producing results of 2.69 and 1.236 respectively. The mean shows that the respondents did not agree with the statement on the resources for each activity were estimated.

The mean value and standard deviation for the statement "acquiring project resources were made on time" are 2.82 and 1.059 respectively. These percentages were determined by the proportion

of respondents, who strongly agreed 10.8%, agreed 6.2%, neutral 46.2%, disagreed 27.7%, and strongly disagreed 9.2%. The mean figure shows that respondents' attitudes of the timely delivery of the resource were neutral.

The information provided supports the statement that "project team was developed." 3.1% of respondents selected strongly agree, 15.4% selected agreed, 38.5% selected disagree and 43.1% neutral. The mean value and standard deviation returning results of 2.83 and 0.802 respectively. As a result, the respondents' opinions about the project team were developed are neutral.

The statement "project team was managed and controlled" has a mean value and standard deviation of 2.58 and 0.998 respectively. These are calculated based on the percentage of respondents who strongly agreed with it 6.2%, agreed with it 10.8%, 26.2% were neutral, disagree with it 49.2%, and strongly disagree with it 7.7%. The mean value shows that respondents were neutral about how the project team was managed and handled.

4.3.7 Project Communication Management

According to the Project Management Institute (2017), project communication management is organizing, managing, and tracking communications.

Table 4.8 Project communication management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1. 1.	The information and communication needed for the project were determined	Frequency	7	14	9	35	0	1.091	2.89
		Percentage	10.8	21.5	13.8	53.8	0		
2.	Making the required information available to project stakeholders were made on time	Frequency	12	6	28	19	0	1.054	3.17
		Percentage	18.5	9.2	43.1	29.2	0		

3.	Collecting and disseminating performance information were made on time	Frequency	7	17	26	15	0	0.936	3.25
		Percentage	10.8	26.2	40	23.1	0		
4.	Communication between stakeholders were controlled	Frequency	6	7	14	35	3	1.05	2.66
		Percentage	9.2	10.8	21.5	53.8	4.6		
Average mean								2.99	

Source: own survey (2023)

The data provided supports the statement that "The information and communication needed for the project were determined". 13.8% selected neutral, 53.8% selected disagree, 21.5% selected agreed and 10.8% strongly agree. The mean value and standard deviation were producing results of 2.89 and 1.091 respectively. The mean indicates that respondents agree with the statement that the information and communication required for the project were identified.

The mean value and standard deviation for the statement "Making the required information available to project stakeholders were made on time" are 3.17 and 1.054 respectively. These percentages were determined by the amount of respondents, who strongly agreed 18.5%, agreed 9.2%, neutral and 43.1%, disagreed 29.2%. The mean value indicates that respondents had positive beliefs toward timely delivery of the necessary information to project stakeholders.

The information provided supports the statement that "Collecting and disseminating performance information were made on time" 10.8% of respondents selected strongly agree, 26.2% selected agreed, 40% selected disagree and 23.1% neutral. The mean value and standard deviation returning results of 3.25 and 0.936 respectively. The average number indicates that the opinions of the respondents on collecting and distributing performance data were timely.

The statement "Communication between stakeholders were controlled" has a mean value and standard deviation of 2.66 and 1.05 respectively. These are calculated based on the percentage of respondents who strongly agreed with it 9.2%, agreed with it 10.8%, 21.5% were neutral, disagree with it 53.8%, and strongly disagree with it 4.6%. The mean value indicates that the opinions of respondents toward managed stakeholder communication were neutral.

4.3.8 Project Risk Management

Risk management planning, risk identification, qualitative and quantitative risk analysis, risk response planning, response execution, and process monitoring and control, according to the Project Management Institute (2017).

Table 4.9 Project risk management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1. 1.	Risks were identified and labeled in risk register	Frequency	8	19	11	27	0	1.097	3.12
		Percentage	12.3	29.2	16.9	41.5	0		
2.	For the identified risks response tactics were developed	Frequency	13	8	30	14	0	1.03	3.31
		Percentage	20	12.3	46.2	21.5	0		
3.	The identified risks were monitored and controlled	Frequency	6	18	23	18	0	0.95	3.18
		Percentage	9.2	27.7	35.4	27.7	0		
4.	Proactive risk responses were made	Frequency	5	8	17	34	1	0.976	2.72
		Percentage	7.7	12.3	26.2	52.3	1.5		
Average mean								3.08	

Source: own survey (2023)

The data provided supports the statement that "Risks were identified and labeled in risk register". 16.9% selected neutral, 41.5% selected disagree, 29.2% selected agreed and 12.3% strongly agree. The mean value and standard deviation were producing results of 3.12 and 1.097

respectively. The mean indicates that the opinions of respondents of the statement that risks were identified and included in a risk register are neutral.

The mean value and standard deviation for the statement "For the identified risks response tactics were developed." are 3.31 and 1.03 respectively. These percentages were determined by the total of respondents, who strongly agreed 20%, agreed 12.3%, neutral and 46.2%, disagreed 21.5%. The mean value indicate that respondents had positive attitude towards the identified risks response tactics were developed.

The information provided supports the statement that "The identified risks were monitored and controlled" 9.2% of respondents selected strongly agree, 27.7% selected agreed, 27.7% selected disagree and 35.4% neutral. The mean value and standard deviation returning results of 3.18 and 0.95 respectively. The average number suggests that the responses of participants about monitored and controlled risks were neutral.

The statement "proactive risk responses were made" has a mean value and standard deviation of 2.72 and 0.976 respectively. These are calculated based on the percentage of respondents who strongly agreed with it 7.7%, agreed with it 12.3%, 26.2% were neutral, disagree with it 52.3%, and strongly disagree with it 1.5%. According to the mean value, respondents had negative perceptions about proactive risk management strategies.

4.3.9 Project Procurement Management

Project procurement management, according to the Project Management Institute (2017), refers to the processes necessary to get goods, services, or supplies from parties other than the project team.

Table 4.10 Project procurement management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1.	Procurement Management plan was	Frequency	13	31	17	4	0	0.827	3.82
		Percentage	20	47.7	26.2	6.2	0		
2.	Appropriate quotations, bid, offers	Frequency	11	13	29	10	2	1.032	3.32
		Percentage	16.9	20	44.6	15.4	3.1		
3.	Potential sources were	Frequency	10	22	19	12	2	1.058	3.4

	identified	Percentage	15.4	33.8	29.2	38.5	3.1		
4.	Procurements were conducted as planned	Frequency	15	30	12	8	0	0.939	3.8
		Percentage	23.1	46.2	18.5	12.3	0		
5.	Contract was completed and settled properly	Frequency	5	13	36	9	2	0.87	3.15
		Percentage	7.7	20	55.4	13.8	3.1		
Average mean								3.49	

Source: own survey (2023)

The statement "Procurement Management plan was defined" has a mean value of 3.82 and a standard deviation of 0.827. These are derived from the percentage of respondents who strongly agreed with the statement 20%, agreed with the statement 47.7%, neutral with the statement 26.2% and disagreed with the statement 6.2%. It is clear from the mean value that procurement management plan was defined.

Appropriate quotations, bid, offers or proposal were obtained has a mean value of 3.32 and a standard deviation of 1.032. With 20% of respondents agreeing, 16.9% of respondents strongly agreeing 44.6% remaining respondents neutral, 15.4% respondents disagreeing and 3.1% respondents strongly disagreeing with the statement, this was estimated using SPSS. Therefore, it can be said that the respondents think appropriate quotations, bid, offers or proposal were obtained.

According to the data gathered, 33.8% of respondents agreed, 15.4% said they were strongly agreed, 29.2% said they were neutral, 38.5% said they disagreed, and the remaining respondents said they strongly disagreed with the statement that the potential sources were identified. Then, using SPSS, a mean value of 3.32 and a standard deviation of 1.032 were generated. This mean indicates potential sources were identified.

According to the data gathered, on the statement "Procurements were conducted as planned" 46.2% of the respondents agreed, 23.1% of the respondents strongly agree, 12.3% of the respondents disagree and the remaining 18.5% are neutral. Then SPSS calculated the mean value and standard deviation, which were 3.8 and 0.939, respectively. This mean value also demonstrates that the procurements were conducted as planned.

According to the data gathered, 20% of respondents agreed, 13.8% disagreed, 55.4% were neutral, 3.1%disagreed strongly and 7.7% strongly agreed neutral about the statement Contract was completed and settled properly. Then, using SPSS, the mean value and standard deviation were calculated, showing up with 3.15 and 0.87, respectively. This mean value provides a sense of neutrality about the claim that the contract was completed and settled properly.

4.3.10 Project Stakeholders Management

Table 4.11 Project stakeholder management practice

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1.	Stakeholders in the project were identified	Frequency	19	30	15	1	0	0.77	4.03
		Percentage	29.2	46.2	23.1	1.5	0		
2.	Stakeholders engagement were planned	Frequency	11	32	21	1	0	0.727	3.82
		Percentage	16.9	49.2	32.3	1.5	0		
3.	The communication between project stakeholders were effective	Frequency	25	30	9	1	0	0.739	4.22
		Percentage	38.5	46.2	13.8	1.5	0		
4.	Stakeholders engagement was controlled	Frequency	11	28	22	4	0	0.824	3.71
		Percentage	16.9	43.1	33.8	6.2	0		
5.	Project progress was reviewed frequently with the customer	Frequency	19	27	18	1	0	0.8	3.98
		Percentage	29.2	41.5	27.7	1.5	0		
Average mean								3.95	

Source: own survey (2023)

The statement "Stakeholders in the project were identified" has a mean value of 4.03 and a standard deviation of 0.77. These are derived from the percentage of respondents who strongly agreed with the statement 29.2%, agreed with the statement 46.2%, neutral with the statement

23.1% and disagreed with the statement 1.5%. It is clear from the mean value that stakeholders in the project were identified.

Stakeholders engagement were planned has a mean value of 3.82 and a standard deviation of 0.727. With 49.2% of respondents agreeing, 16.9% of respondents strongly agreeing 32.3% remaining respondents neutral and 1.5 % respondents disagreeing with the statement, this was estimated using SPSS. Therefore, it can be said that the respondents think stakeholders engagement were planned.

According to the data gathered, 46.2% of respondents agreed, 38.5% said they were strongly agreed, 13.8% said they were neutral and 1.5% said they disagreed with the statement the communication between project stakeholders were effective. Then, using SPSS, a mean value of 4.22 and a standard deviation of 0.739 were generated. This mean indicates communication between project stakeholders were effective.

According to the data gathered, on the statement "Stakeholders engagement was controlled" 43.1% of the respondents agreed, 16.9% of the respondents strongly agree, 6.2% of the respondents disagree and the remaining 33.8% are neutral. Then SPSS calculated the mean value and standard deviation, which were 3.71 and 0.824 respectively. This mean result also shows that respondents think stakeholder engagement was under control.

According to the data gathered, 41.5 % of respondents agreed, 1.5% disagreed, 27.7% were neutral, and 29.2% strongly agreed about the statement Project progress was reviewed frequently with the customer. Then, using SPSS, the mean value and standard deviation were calculated, showing up with 3.98 and 0.8, respectively. This mean result also shows that respondents' opinions of the client-regularly-discussed project progress were positive.

4.4 Assessing project success of project Denbecha-Sekela

Table 4.12 Project success

No	Description	Frequency & Percentage	5 (SA)	4 (A)	3 (N)	2 (D)	1 (SD)	Std. Deviation	Mean
1.	Finished on time	Frequency	8	31	19	7	0	0.842	3.62
		Percentage	12.3	47.7	29.2	10.8	0		

2.	Finished within budget	Frequency	10	36	12	5	2	0.927	3.72
		Percentage	15.4	55.4	18.5	7.7	3.1		
3.	Minimum number of agreed scope changes	Frequency	9	26	20	8	2	0.986	3.49
		Percentage	13.8	40	30.8	12.3	3.1		
4.	Activities carried out as scheduled	Frequency	8	28	16	12	1	0.985	3.46
		Percentage	12.3	43.1	24.6	18.5	1.5		
5.	Met planned quality standard	Frequency	3	19	26	17	0	0.857	2.95
		Percentage	4.6	29.2	40	26.2	0		
6.	Complied with environmental regulations	Frequency	9	7	22	26	1	1.067	2.95
		Percentage	13.8	10.8	33.8	40	1.5		
7.	Met safety standards	Frequency	3	12	17	30	3	0.976	2.72
		Percentage	4.6	18.5	26.2	46.2	4.6		
8.	Effectiveness of work	Frequency	6	22	19	18	0	0.976	3.25
		Percentage	9.2	33.8	29.2	27.7	0		
Average mean								3.27	

Source: own survey (2023)

The statement "finished on time" has a mean value of 3.62 and a standard deviation of 0.842. These are derived from the percentage of respondents who strongly agreed with the statement 12.3%, agreed with the statement 47.7%, neutral with the statement 29.2% and disagreed with the statement 10.8%. It is clear from the mean value that the project were finished on time.

The statement "finished within budget" has a mean value of 3.72 and a standard deviation of 0.927. These are derived from the percentage of respondents who strongly agreed with the statement 15.4%, agreed with the statement 55.4%, neutral with the statement 18.5%, disagreed

with the statement 7.7% and strongly disagreed with the statement 3.1%. It is clear from the mean value that the project were finished within budget.

Minimum number of agreed scope changes has a mean value of 3.49 and a standard deviation of 0.986. With 40% of respondents agreeing, 13.8% of respondents strongly agreeing 30.8% respondents neutral, 12.3% respondents disagreeing and, 3.1% respondents strongly disagreeing this was estimated using SPSS. Therefore, it can be said that the respondents think minimum number of agreed scope changes.

According to the data gathered, 43.1% of respondents agreed, 12.3% said they were strongly agreed, 24.6% said they were neutral, 18.5% said they disagreed and 1.5% said they were strongly agreed with the statement the Activities carried out as scheduled. Then, using SPSS, a mean value of 3.46 and a standard deviation of 0.985 were generated. This mean indicates activities carried out as scheduled.

The statement "Met planned quality standard" has a mean value of 2.95 and a standard deviation of 0.857. These are derived from the percentage of respondents who strongly agreed with the statement 4.6%, agreed with the statement 29.2%, neutral with the statement 40% and disagreed with the statement 26.2%. The mean number makes it evident that the respondent had a neutral mind that project met planned quality standard.

The statement "complied with environmental regulations" has a mean value of 2.95 and a standard deviation of 1.067. These are derived from the percentage of respondents who strongly agreed with the statement 13.8%, agreed with the statement 10.8%, neutral with the statement 33.8%, disagreed with the statement 40% and strongly disagreed with the statement 1.5%. The mean number makes it evident that the respondent had a neutral about project Complied with environmental regulations.

Met safety standards have a mean value of 2.72 and a standard deviation of 0.976. With 18.5% of respondents agreeing, 4.6% of respondents strongly agreeing 26.2% respondents neutral, 46.2% respondents disagreeing and 4.6% respondents strongly disagreeing this were estimated using SPSS. It can be concluded that the respondents did not believe the project met safety standards.

Project success is increased through effectiveness of work, in accordance with table (4.12) number 8. Of the respondents, none of the respondents chose strongly disagree, 18 (27.7%) chose disagree, 19 (29.2%) confirmed neutral, 22 (33.8%) responded in favor of agree, and 6 (9.2%) responded in favor of strongly agreeing. The majority of respondents (28, or 43%), as indicated by the response rate, concur. and 18

people (27.7%) disagree. The majority of respondents, according to the data, believe that effectiveness of work can boost Project success. While the rate of those who disagree is about less.

The mean and standard deviation for the "effectiveness of work score" in table 4.12 are also 3.250 and 0.976, respectively. The majority of respondents were in agreement, according to the analysis of the mean and SD for the effectiveness of work results. According to the mean and SD values, employees are generally satisfied with the effectiveness of work. Thus, the responses imply that the majority of them are happy with the overall effectiveness of work of the organization's and that the Project success programs are in line with those goals and objectives.

CHAPTER FIVE

SUMMARY OF FONDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of Major Findings

This study assesses the project management practices in core consulting engineers; the case of Denbecha-Sekela road project. The study has conducted questionnaire and document reviews. The objective of the study is to assess the project management practices of Core Consulting Engineer Plc and identify the gaps.

Analysis of the data based on project management knowledge area give the below result. Project integration management with average mean score (3.44); project scope management with average mean score (2.65); project schedule management with average mean score (3.00); project cost management with average mean score (2.99); project quality management with average mean score (3.46); project resource management with average mean score (2.73); project communication management with average mean score (2.99); project risk management with average mean score (3.08); project procurement management with average mean score (3.49) and project stakeholder management with average mean score (3.95). The five project management knowledge areas were between the range of 3.44 and 3.95 implies that those areas are well practiced. The impartially practiced areas range from 2.99 and 3.08. The less mean value implies poor practice of project scope management and project resource management.

Analysis of the data about project success of Denbecha-Sekella were derived based on factors; finished on time, finished within budget, minimum number of agreed scope changes, activities carried out as scheduled, met planned quality standard, complied with environmental regulations, met safety standards and effectiveness of work have average mean (3.27). The average mean support Denbecha-Sekella road project is in success.

5.2 Conclusions

The research objective of this study was to assess project management practices specifically within core consulting engineers, with a focus on the Denbecha-Sekela road project. In order to achieve this objective, specific objectives were targeted, and fundamental scientific questions

were formulated. To gather the necessary data, a descriptive research design was employed, and a questionnaire was utilized as the primary data collection instrument.

Based on the analysis and interpretation of the data, several conclusions were drawn. Among the ten knowledge areas of project management, core consulting engineers were found to have effectively practiced four of them: project integration management, project quality management, project procurement management, and project stakeholder management. This suggests that these specific areas received adequate attention and implementation during the Denbecha-Sekela project.

However, the analysis of the responses indicated that the practice of the remaining project management areas was rated as average or below average. This implies that core consulting engineers faced challenges or shortcomings in effectively implementing these aspects of project management within the project. It can be assumed that there is potential for development in project management methods linked to areas such as project scope management, resource management, time management, risk management, and others. The precise areas where improvement is required.

Overall, the findings of the study highlight the strengths and weaknesses of project management practices within core consulting engineers, specifically in relation to the Denbecha-Sekela project. While certain knowledge areas were found to be effectively practiced, there is a clear need for improvement in other areas. These findings can serve as a basis for identifying areas of focus and implementing strategies to enhance project management practices within the organization, leading to improved project outcomes and overall success.

5.3 Recommendations

The findings indicate that the organization has a dedicated project management department, which is highly beneficial for ensuring efficient and effective project management practices across the organization. According to the interpretations made from the responses, it is recommended that the organization consider implementing a more structured and regular program for project management training. While it is positive that access to training resources is available as needed, offering regular opportunities for employees to develop their project management skills can have significant benefits for the organization in terms of ensuring

efficient handling of projects. The development and implementation of a standardized curriculum for project management training with a focus on key competencies can help ensure greater consistency and standardization in training delivery, regardless of internal constraints, such as budget or trainer availability. Additionally, offering digital training resources, such as online courses or interactive learning workshops, can improve accessibility and provide employees with training opportunities that are easier to fit into their schedules. Such measures can result in a more capable and skilled workforce better equipped to deliver successful projects, boosting efficiency, and profitability.

The research findings highlight that core consulting engineers, particularly in the case of the Denbecha-Sekela project, have shown inadequate practice of project scope management. Specifically, the areas of concern are the project scope plan, project scope detail, and project scope validation. To improve project scope management practices, it is crucial for organizations to prioritize the implementation of project scope management processes and utilize corresponding tools and techniques. By doing so, they can enhance their ability to define and control project boundaries effectively. This, in turn, contributes to the successful delivery of projects. To address these shortcomings, attention should be given to preparing an effective project management plan. This includes ensuring the full collection of project requirements, providing a detailed description of both the project and the product, and gaining experience in the formal acceptance of project deliverables. Additionally, organizations need to focus on the proper monitoring of project and product scope to effectively manage and control project scope throughout the project lifecycle.

The research findings also reveal weaknesses in the practice of project resource management, particularly in resource estimation for each activity and managing the project team. It is important to recognize that successful project outcomes require more than just resource planning. In this regard, organizations should go beyond human resource planning and consider the availability of competent manpower through proper recruitment and development strategies. It is crucial to identify skilled and experienced project team members from the early stages of the project and ensure they are properly assessed and managed. This is because the project team serves as the engine for project success. Additionally, it is recommendable to leverage tools and

techniques in project resource management practices. By doing so, organizations can effectively allocate and manage project resources, enhancing overall project management practice.

Finally, to improve project management effectiveness, organizations should heed the research recommendations regarding project scope management and project resource management. By implementing project scope management processes, utilizing appropriate tools and techniques, and giving due attention to critical elements such as effective project management planning, thorough requirement collection, detailed project and product descriptions, and proper acceptance and monitoring of project and product scope, organizations can enhance their ability to deliver successful projects. Moreover, by going beyond resource planning and focusing on acquiring skilled manpower, recruiting and developing talent, and applying tools and techniques in project resource management, organizations can effectively manage project resources and elevate their overall project management capabilities.

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APPENDIX A:

Questionnaire

ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES

Masters of Project Management

SECTION I: Survey Questionnaire

To find out more about project management at Core Consulting Engineers Plc, a survey will be developed. The purpose of this investigation is to gather information that will be used to create a research report for academic purposes. Your feedback is important to the researcher's efforts. As a result, I respectfully ask that you fill out this questionnaire in order to fulfill the study's main goal. Your response will be used **exclusively for this study and maintained in the strictest of confidence**. Thank you so much for agreeing to take part in this survey and for your thoughtful pre-poll comments. Should you have any questions or comments, kindly get in touch with me at the following addresses: Tel: 0913403944 Email-fiyameta28@gmail.com

Part I: Demographic profile of respondents

General Direction: Mark with a tick [✓] If the alternative given does not satisfy your choice, you can write your answer in space provided for the option

1. Sex 1. Male 2. Female
2. Age Group: 1. Below 30 2. 30-40 3. 40-50 4. above 50
3. Job Category: 1. Project Coordinator 2. Project manager 3. Project Member
4. Support Staff 5. or other _____
4. Educational status 1. Diploma/TVT 2. BA/BSc 3. MA/MSc 4. Others _____
5. Work Experience 1. 0-5 years 2. 6-10 years 3. 11-15 years 4. ≥15 years

General Direction: In a scale of 1 to 5, please indicate the extent to which you agree with each of the following statements in relation to how well the project management practices were applied. Mark with a tick [✓] against the most applicable response. Where; 1= strongly disagree and 5= strongly agree.

Part II Questions related to the ten Knowledge Areas of Project Management according to PMBOK

No.		5	4	3	2	1
Project Integration Management						
1.	Project Manager was assigned early in the project					
2.	There were efficient change managements					
3.	Single and cohesive project management plan was developed					
4.	Project was closed with in pre-scheduled time					
5.	Proper monitoring and reporting scheme were placed and practiced					
Project Scope Management						
1.	Requirements of the stakeholder's need was determined and documented					
2.	Project scope statement that details project scope, boundaries, acceptance criteria and project exclusions were defined.					
3.	Work Break Down (scope baseline) was created					
4.	A plan that detail how the project scope will be defined, validated, and controlled was generated					
5.	Scope validation (by the customer or the user) were done for each deliverable					
Project Schedule Management						
1.	List of activities to be executed were defined					
2.	Activities were sequenced time required for each of activities were estimated					
3.	Schedule management plan was developed					
4.	Changes to the project schedule was controlled					
Project Cost Management						
1.	Cost estimate in-line with agreed scope were made					
2.	A budget, which is used as cost baseline, was determined					
3.	A cost management plan that detail how the project budget is estimated and controlled was generated					

4.	Change in project budget was controlled						
Project Quality Management							
1.	Quality standards of the project were identified						
2.	Quality standards of the project were reviewed						
3.	Project performance were evaluated on regular basis						
4.	Results were monitored to check if they comply with the quality standards identified						
Project Resource Management							
1.	Resources for each activity was estimated						
2.	Acquiring project resources were made on time						
3.	Project team was developed						
4.	Project team was managed and controlled						
Project Communication Management							
1.	The information and communication needed for the project were determined						
2.	Making the required information available to project stakeholders were made on time						
3.	Collecting and disseminating performance information were made on time						
4.	Communication between stakeholders were controlled						
Project Risk Management							
1.	Risks were identified and labeled in risk register						
2.	For the identified risks response tactics were developed						
3.	The identified risks were monitored and controlled						
4.	Proactive risk responses were made						
Project Procurement Management							
1.	Procurement Management plan was defined						
2.	Appropriate quotations, bid, offers or proposal were obtained						
3.	Potential sources were identified						
4.	Procurements were conducted as planned						
5.	Contract was completed and settled properly						

Project Stakeholders Management					
1.	Stakeholders in the project were identified				
2.	Stakeholders engagement were planned				
3.	The communication between project stakeholders were effective				
4.	Stakeholders engagement was controlled				
5.	Project progress was reviewed frequently with the customer				

Part III: Questions related to relationship between project management practices and project success

No.	Project success factors	5	4	3	2	1
1.	Finished on time					
2.	Finished within budget					
3.	Minimum number of agreed scope changes					
4.	Activities carried out as scheduled					
5.	Met planned quality standard					
6.	Complied with environmental regulations					
7.	Met safety standards					
8.	effectiveness of work					

Part IV: Questionnaires related to project management practices in core consulting engineers; the case of the denbecha-sekela road project

Is there a separate project management department in your organization?

Is there project management training access in the organization?

Do you use the project management guidelines or tools? (If any, please try to mention it)

Does your company have a project charter for all its projects? How is the project charters prepared and does your company make the charter official to the stakeholders?
