ASSESSMENT OF PROJECT MANAGEMENT PRACTICE IN ROAD CONSTRUCTION: A CASE STUDY ON CORE CONSULTING ENGINEERS

MBA PROJECT WORK

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Declaration

I declared that the research work entitled: - Assessment of Project Management Practice In Road Construction: A Case Study On Core Consulting Engineers Plc. is the outcome of my own effort and all resources or the materials used for this paper has been acknowledged. It is done by me independently except for the guidance and suggestion of my research advisor. It is presented, in partial fulfillment of the requirements for the degree of MA in Project Management.

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Student researcher	Signature	Date

Letter of Certification

This is to Certify that Mulualem Solomon has carried out the research work entitle: - 'Assessment of Project Management Practice in Road Construction: A Case Study on Core Consulting Engineers' under my guidance and supervision. Accordingly, I assure that his work is appropriate and standard enough for the submission in partial fulfillment of the requirement for the award of Masters of Art in project management.

Confirmed by: - Worku M. (Dr) _____ _____

Research Advisor Signature Date

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Abstract

This study assesses the project management practices in road construction a case study on Core Consulting Engineer's Plc. (CCE), a 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. primary and secondary data was collected for this project work. The primary data is collected from 60 professionals at CCE 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 26). 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 CCE perform well in scope management, integration management, quality management, procurement management, and stakeholder management but struggles with project schedule and risk management. The paper identifies the strengths and weaknesses of the company's project management practice and provides recommendations for improvement. The strength includes the ability to procure and maintain quality standards, and its weakness is difficulties in managing the project schedule in an effective and efficient manner. The paper also suggests that the company should provide adequate 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. The paper highlights the importance of effective project management practice for achieving project success and stakeholder satisfaction.

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

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ACRONYM AND ABBREVIATION

ANSI: American National Standard

CCE: Core Consulting Engineer's

CPM: Critical Path Method

EVM: Earned value management

GDP: Growth Domestic Product

ISO: International Organization for Standardization

PM: Project Management

PMBOK: Project Management Body of Knowledge

PMI: Project Management Institute

PMKA : Project Management Knowledge Areas

SPSS: Statical Package for Social Science

WBS: Work Breakdown Structure

Chapter 1
Introduction

1.1. Background of the Study

Road construction projects are a specific category of construction projects that involve the design, construction, and maintenance of roads and highways. Road construction projects are essential for the economic and social development of any country, as they facilitate transportation, communication, and trade. 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.

Ethiopia has a long history of road construction, dating back to the 19th century when the first gravel roads were built by the Ethiopian monarchs. However, the modern asphalt roads were constructed during Italian occupation. After the liberation, successive regimes have implemented various road improvement plans, with different policies and objectives. According to the Ethiopian Roads Authority (ERA), the overall length of the country's roads has reached 136,044 km by 2019. And the government's 10-year development plan, which places a high priority on infrastructure development, is expected to push the construction industry in Ethiopia to grow at an average annual growth rate of more than 8% until 2026.

A project is a temporary effort 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).

1.2. Background of the Organization

This project work will 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.

The managing director of Core Consulting Engineers Plc is at the top of the organization chart, followed by five departments: contracting and marketing, project management, water resources, road and bridge, and finance and administration. CORE is managed by senior engineers with different Civil Engineering Professions with more than sixteen years of relevant experience in the feasibility studies, final design, and supervision and maintenance projects. And its'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.

1.3. Statement of the problem

Project management practice is the application of project management principles, methods, tools, and techniques to achieve project objectives within given constraints. Kissi and Ansah (2015) described professional project management techniques as "the knowledge and methods for organizing, coordinating, and controlling project-related tasks." Project management practice can vary depending on the type, size, complexity, and context of the project, as well as the skills and experience of the project manager and the project team. Low productivity and poor job quality are caused, by a lack of effective PM approaches. Regardless of the professional project management

discipline's development, there are still considerable challenges in using efficient project management methods.

Ethiopia's construction sector has shown significant expansion since 2001 (EC). The sector's GDP contribution has climbed to 5.6%, according to a study by Zewdu and Aregaw (2015), and is now getting close to the sub-Saharan region's average (6%). Despite its significant economic contribution to Ethiopia's economy, the construction sector continues to encounter several operational challenges that could lead to project failure. Some of these challenges include project schedule and expense overruns, low quality project deliverables, inability to achieve project criteria, and difficulty in implementing best practices (Zewdu & Aregaw 2015; Abraham, 2008).

One important issue with Ethiopian construction projects that harms intended economic development is the massive delay of infrastructure and construction projects (ECIDP,2014; Li-Yin et al.,2006). According to Kassa's (2018) analysis, 88% of Ethiopia's road projects were over budget and behind schedule. According to Singh's 2009 report, project cost overruns are a serious issue in the construction sector of developing countries such as Ethiopia. According to Wakjira (2011), cost overruns happened on 80% of Ethiopian road development projects. Project management practices are one of the many causes of project time and cost overruns. According to Zewdu and Aregaw (2015), project management practice failure or ambiguity has a direct impact on the project's cost, schedule, and quality.

Projects must be completed on time, within the budget that was allocated, and with the expected level of quality. But because of inefficient project planning, execution, regulation, and related processes, many projects take longer to complete, cost more than they should, and some projects are even abandoned. According to Werku Koshe and K. N. Jha's (2016) study on Ethiopia's construction industry, just 8.25% of projects have finished by the dates they were originally expected to. This examination revealed that the remaining 91.75% was late.

Many people believe that all of these problems, which are believed to be caused by insufficient planning and management of the road projects, will be resolved if the planning and execution phases of road projects are carefully followed, especially the planning and management stage of the projects. Because of this, it's critical to assess the project management practices used in road construction projects in order to identify their benefits and drawbacks with relation to attaining the objectives they are meant to.

The road construction industry relies significantly on consultants to plan, develop, and implement transportation infrastructure projects. Effective project management is critical in ensuring that road consulting firms provide quality services and meet the demands and expectations of their clients. The primary goal of this project work is to evaluate the project management practices of Core Consulting Engineers. During the literature review session, the author's search for research addressing the consulting construction company in Ethiopia was unsuccessful. The evaluation results and anticipated recommendations for project management best practices can help the project owner and other stakeholders improve project delivery and target goals.

Furthermore, it has not been sufficiently investigated about how local environmental and cultural diversity affects the success or failure of Ethiopian projects. As a result, more research is required from both a theoretical and practical standpoint to better comprehend Ethiopia's complicated project management practice.

1.4. Research Question

1. What are the project management practice carried out by core consulting engineer’s plc and their measuring benchmarks?
2. How does the core consulting engineer’s Plc manage the road project in-line with the ten-project management knowledge areas?
3. How does the core consulting engineer's plc's project success look in terms of their project management methodology?

1.5. Objective of the study

1.5.1. General objective

The general objective of the study is to assess the project management practices of Core Consulting Engineer Plc and identify the gaps in comparison to conventional as well as best PM practices from the literature.

1.5.2. Specific objective

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

- To identify the project management practice adapted by core consulting engineers plc.
- To assess project management practice of core consulting engineer's plc in-line with the ten project management knowledge areas defined in PMBOK.
- To assess the core consulting engineer's plc's projects success with respect to its project management practice.

1.6. Significance of the study

Studying the project management practices of a company can offer valuable insights into the actual functioning of the organization's strategies and process development. This exercise can benefit the enhancement of current practices, identification of weaknesses, and development of new ideas. The present project work aims to facilitate benchmarking of best practices, emerging trends, and opportunities for improvement within the sector. Furthermore, this study intends to highlight the weaknesses and recommend improvements to the project management practice to leverage the findings. The information obtained from this research could be utilized by project managers and project teams involved in the planning, designing, implementation, and control of Core Consulting Engineer Plc projects. Additionally, this research paper follows a distinct approach to categorize challenges associated with project management knowledge areas, which can be used as a baseline for further studies.

1.7. Scope and limitation of the study

This study examines the project management practice of Core Consulting Engineer Plc. The study adopts the PMBOK framework, which defines 10 project management knowledge domains that cover the essential aspects of managing projects. despite the fact that there are several challenges pertaining to project management practice, this study only focuses on 10 project management knowledge domains.

1.8. Operational definition of terms

Project: Project is a temporary endeavor undertaken to create a unique product or service or result. (American National Standard ANSI/PMI99-001-2004)

Project management: Project management is the process of the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. That is, project management is an interrelated group of processes that enables the project team to achieve a successful project. Carly (2004).

Project management practice: Project management practice is the deliberate application of skills, knowledge, and tools to initiate, plan, execute, control and close projects in order to meet project objectives. (International Academic Journal of Information Sciences and Project Management | Volume 3, Issue 1, pp. 28-46)

1.9. Organization of the study

The project work is organized into five chapters. The first chapter, which is the introductory section, presents the background study, project description, problem statement, objectives of the study, research questions, scope, limitation, and significance of the study. The second chapter is a survey of related literature that includes references to works that have been done in this field of research that discuss project management knowledge area, project management success, and other key frameworks and ideas. The research design, target population, sampling methods, sample size, and data collection tools are all covered in chapter three, which is the section on research methodology. And chapter four, which is the data analysis and findings section, presents findings and analysis from both qualitative and quantitative data obtained from the instruments are analyzed and discussed in detail. The concluding and recommending chapters are the final chapter, chapter five, which summarizes the findings and makes recommendations.

Chapter 2
Literature review

2.1. Introduction

2.1.1. Project

According to the Project Management Institute (PMI), a project is a short-term initiative launched with the goal of providing a specified outcome, product, or service that fulfills the needs or expectations of the stakeholders. A project has a defined beginning and ending date, a constrained scope, and a finite amount of resources. The duration of a project can vary depending on its complexity, scope, and objectives. A project may be abandoned for one of two reasons: either it accomplishes its objectives and yields the desired results effectively, or it does not and is regarded unworkable or unattractive. (Saxena, 2016) Each project produces a distinct output that is different from the outputs of other projects or routine operations. Some aspects of the project deliverables and tasks may be similar or repeated, but they do not change the fact that the project work is unique and customized. Because of this uniqueness, projects may face uncertainties or variations in the nature, quality, or quantity of the outputs they produce. These uncertainties or variations may pose challenges or opportunities for the project team and stakeholders.

According to (Kerzner, 2013) a project can be considered to be any series of activities and tasks that: have a specific objective, with a focus on the creation of business value, to be completed within certain specifications, have defined start and end dates, have funding limits (if applicable), consume human and non-human resources (i.e., money, people, equipment).

It is widely acknowledged that projects need to have clearly defined success criteria, adequate resource allocation, sound project management practices, effective stakeholder communication, risk management, on-time delivery of results, alignment of project objectives with organizational strategic goals, participation of relevant parties in decision-making processes, etc. (Baccarini &Saraiva 2018). A degree of uncertainty is also frequently present in projects as a result of the lack of firm understanding regarding events and results (Arditi et al., 2004). This means that in order to effectively manage risk associated with changes in requirements or other factors, careful monitoring throughout the life cycle is required.

The projection of concepts and actions onto new enterprises is a trait that all projects have in common. Because of the ever-present element of risk and uncertainty, the events and tasks leading up to completion can never be fully predicted (Triant and Dennis, 2008). projects can be categorized in to four, according to Triant and Dennis (2008), these are: civil engineering and construction projects, manufacturing projects, projects associated with management change and new IT systems, and projects for pure scientific research.

1. Civil Engineering and Construction Project

   This project type is common in industrial projects. They all have one thing in common: they are all performed on a site that is exposed to weather and is frequently far from the contractor's main office. These projects are open to the public and come with unique risks and administrative difficulties. They may necessitate significant capital investment as well as strict progress, financial, and quality management. Because the processes are frequently dangerous, health and safety issues require special care, particularly in heavy construction, tunneling, and mining.

2. Manufacturing Project

   Manufacturing initiatives lead to the creation of a piece of mechanical or electronic equipment, a machine, a ship, an aircraft, a land vehicle, or some other product or piece of custom hardware. Even though the final product may be specifically designed for a particular client, internal research and development initiatives for goods to be marketed in all market sectors also fall under this manufacturing category. Manufacturing projects are typically carried out in a laboratory, factory, shipyard, hangar, or other home-based location where the company may exercise on-the-spot management and provide an optimal environment in which to accomplish and monitor the work.

3. Projects Associated with Management Change and New IT Systems

   This type of project demonstrates the idea that, regardless of size, every business will probably need project management competence at least once during its existence. These are the projects that arise when a company relocates its headquarters, develops and launches a new computer system, launches a marketing campaign, prepares for a trade exhibition, produces a feasibility or other study report, restructures the organization, mounts a stage show, or engages in any

operation that involves the management and coordination of activities to produce an end result that is not identifiable primarily as an item of hardware or construction.

4. Projects For Pure Scientific Research

   Projects for purely scientific study fall under a distinct category than projects for research and development. They can sometimes lead to game-changing discoveries that result in massive profits. They can, however, also spend a lot of money over an extended period of time without leading to any beneficial or profitable results. The greatest risk is associated with research projects since they attempt to explore novel fields of human knowledge. Typically, it is difficult or impossible to define the project's objectives, and the potential outcomes may not be known. Thus, the project management techniques that are effective for industrial, manufacturing, or managerial projects are typically not appropriate for pure research initiatives. These strategies typically necessitate clear and measurable objectives, predictable outputs, and well-defined processes.

2.1.2. Project management

Project management is a systematic approach to the planning, execution, monitoring, and control of projects, aimed at delivering specific objectives within defined parameters such as time, cost, quality, and scope. It involves the application of knowledge, skills, tools, and techniques to manage the various aspects of a project, including its initiation, planning, execution, monitoring and control, and closure. Project management is a crucial process for organizations and individuals who aim to achieve their goals efficiently and effectively by using the available resources optimally. (PMI 2017)

Managing a project typically entails, but is not limited to, the following: Identifying requirements; attending to the various needs, concerns, and expectations of the stakeholders in the planning and execution of the project; establishing, maintaining, and carrying out communications among stakeholders that are active, effective, and collaborative in nature. Managing stakeholders towards meeting project requirements and producing project deliverables by achieving a balance between the opposing project restrictions, such as but not limited to: scope, quality, schedule, budget, resources, and risks.

The value of project management has recently been acknowledged in a variety of industries where its methodical approach to higher efficiency and profitability is applied. Numerous studies have emphasized key success factors for any project, including effective team member communication, efficient use of the team's skillsets, efficient use of time and money, accurate risk assessment during each project phase, and timely completion within set spending limits (Huhng et al., 2012). The majority of organizations also understand the value of having well-managed projects with continuous review throughout their life cycle due to the rising demand for quick responses to changing business environments (Matos & Ramos 2010).

2.1.3. project management life cycle

According to PMI project management life cycle (PMLC) is a framework that guides projects from initiation to closure. It consists of five phases: initiation, planning, execution, monitoring and control, and closing. Each phase has specific goals, tasks, and deliverables that contribute to the project's success (Burgess, 2017). The PMLC helps project managers and stakeholders communicate and plan effectively, coordinate work efficiently, and collaborate towards shared objectives (Landauer & Page, 2016). By following the PMLC, organizations can improve their productivity, reduce their costs, and optimize their time (O'Sullivan et al., 2019).

Dividing a large project into smaller portions simplifies the hard process of project management. These sections in a sequential form are referred to as project phases, which can further be separated into sub-phases, and a collection of these phases is referred to as a project life cycle. One or more deliverables are finished at the end of each project phase. Importantly, these phases are not usually sequential in character, but can occur concurrently. While researchers have proposed certain representative project life cycles, such as the waterfall model and Muenchet. al.'s (1994) spiral model for the software development life-cycle, Morris' (1994) construction project life cycle, and Murphy's (1989) pharmaceutical project life cycle.

The PMLC is not a guarantee of success, however. It also depends on the quality of the project team and manager, the availability of resources, and the cooperation of stakeholders. Moreover, the PMLC may vary depending on the nature of the project and the needs of the organization (Lock, 2014; Kerzner & Kerzner, 2008). Therefore, project managers need to be flexible and adaptable to changing circumstances and requirements. The PMLC is a useful tool, but not a rigid formula.

The five phases of the PMLC are briefly described below:

- Initiation: This phase defines the project scope, objectives, and deliverables. It also identifies the project stakeholders and their expectations.
- Planning: This phase creates a detailed plan for how the project will be executed. It includes determining the required resources, setting a schedule, and developing a budget.
- Execution: This phase implements the plan. It involves managing the project team, tracking progress, and making adjustments as needed.
- Monitoring and Control: This phase monitors and controls the project's performance against the plan. It includes managing changes to the project scope or deliverables, as well as taking corrective actions if necessary.
- Closing: This phase completes the project and transfers it to operations. It also records the project's lessons learned and evaluates its outcomes.

Fig 1: project management life cycle (PMLC)

Source: project management.com /by hannah donato /5 phase of PMLC you need to know

2.1.4. Project Management in the Road Sector

Project management is the process of planning, organizing, and controlling resources to achieve specific goals and objectives. In the road sector, project management involves a systematic approach to delivering road infrastructure projects within a stipulated time, budget, and quality

standards. According to Agwu and Anosike (2015), project management in road infrastructure involves processes such as planning, design, construction, and maintenance of roads.

Planning

The planning phase is the foundation of any road infrastructure project. This phase involves defining the scope, objectives, and deliverables of the project. Proper planning provides the project team with an opportunity to identify potential risks and develop mitigation strategies. It also ensures the efficient allocation of resources, including financial, human, and technical, to the project. The use of project management tools such as Work Breakdown Structure (WBS), Critical Path Method (CPM), and Gantt charts facilitate effective planning in the road sector (Dlama, et al., 2021).

Design

Design is a crucial phase in the construction of road infrastructure. It involves the development of detailed plans and specifications for various road elements such as pavements, bridges, and drainage systems. Design also involves the selection of appropriate materials, technology, and construction methods. Effective project management in the design phase ensures that the project design meets quality standards, constructability, and operability (Veselinović, 2017).

Construction

The construction phase involves the actual physical construction of the road infrastructure. The construction phase involves a range of activities such as clearing, earthworks, drainage, and paving. Effective project management in the construction phase requires the coordination of various activities to ensure compliance with quality standards, safety regulations, and environmental requirements. The use of project management tools such as Work Breakdown Structure (WBS), Critical Path Method (CPM), and Earned Value Management (EVM) facilitate effective management in the construction phase (Naji and Al-Ramadhan, 2019).

Maintenance

Maintenance is the final phase in road infrastructure project management. It involves the repair, rehabilitation, and maintenance of road infrastructure to ensure its continued serviceability. Effective project management in the maintenance phase requires the continual evaluation of the

performance of the road infrastructure to identify defects and implement corrective actions. The use of condition assessment tools, such as visual inspection and non-destructive testing, facilitates effective maintenance management in the road sector (Soltanmohammadi and Ahangari, 2016).

2.2. Project Management Knowledge Area:

The Project Management Knowledge Area (PMKA) comprises ten different knowledge areas that provide a framework for managing projects. These knowledge areas include project integration management, project scope management, project time management, project cost management, project quality management, project resource management, project communication management, project risk management, project procurement management, and project stakeholder management.

Project Integration Management:

According to the Project Management Institute (2017), Project Integration Management is a specialized PMKA that is directly under the project manager's authority and is typically not assigned to other project participants. The creation of a governance framework that makes the management of the requirements of important stakeholders more systematic. it is a type of integration engineering, which is a subset of systems engineering (Eisner et al., 1993) (Asif et al., 2010). According to Berteaux & JavernickWill (2015), organizational integration of knowledge, process, and strategy helps to improve project performance through capabilities developed in previous projects and innovations throughout the organization, all of which support keeping the organization competitive. Kim (2006) investigates the relationship between supply chain integration and a company's performance.

Project Scope Management:

According to the Project Management Institute (2017), project scope management is the process of designing and implementing the procedures that guarantee the project includes all activities required for its successful execution. Every project contains deliverables (for instance, a product or service), hence scope is often established at the level of both the specific needs for each deliverable/product as well as the requirements for the entire project. Project scope frequently includes several components related to setting work schedules, job length, resource requirements, and work prices (Mazur et al., 2009; Moroz & Nemchenko, 2017; Pollack et al., 2018).

Project Schedule Management:

One of the key aspects of any project and a component of the so-called Iron Triangle is the time required to complete specific project tasks and/or the full project (Baloyi & Bekker, 2011; Duggal, 2011; Pollack et al., 2018). As the Project Management Institute (2017) noted, the timetable of project activities is defined and managed rather than time itself. As a result, this knowledge area's former name of "Time Management" has been modified to "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. The start and end times of the activities, their lengths, and the resources allotted to each are typically included in the timetable. A certain amount of flexibility is required in other activities to ensure the project manager can successfully complete the project (Zidane & Olsson, 2017). It also serves as a communication tool for communicating with other project stakeholders.

Project Cost Management:

Another component of the so-called Iron Triangle is cost. Cost typically refers to both direct costs, such as the price of labor and supplies, which are directly related to completing a project, as well as indirect costs, such as general and administrative expenses. Cost management is a crucial component of project management in any project and has a direct impact on a company's strategic goals, long-term strategies, and mission (Pinto, 2010). In the end, effective cost management will support maximizing a business's profit. Therefore, such a system needs the support of senior management, but it also needs to work to include staff from all levels of the organization (Huang & Zhang, 2013). As the Project Management Institute (2017), project cost management includes planning and estimating costs, determining a budget, controlling costs, and auditing the costs.

Project Quality Management:

The final element of the Iron Triangle is quality (Pollack et al., 2018). In the context of a project, quality refers to both completing the technical requirements of the project and satisfying the demands and expectations of the client. Quality management entails the skills and procedures required to guarantee the highest quality goods and services as a result of the project-related activities. As stated in several recent studies (Lu et al., 2019; Ab Malik et al., 2019; Nastase, 2013; Project Management Institute, 2017), in order to achieve (and maintain) the desired level of

excellence, it is essential to plan for quality in a project (establish quality standards), ensure that quality policies have been adequately implemented in the project (so-called quality assurance), and, finally, monitor and assess the performance of specific project deliverables and management processes.

Project Resource Management:

Project resource management is a crucial component of the project process that can make a project successful or unsuccessful. The most crucial resources and factors affecting a project's success or failure are frequently cited as being its human resources (knowledge, skills, and competences) (Denicol et al., 2020; Do Vale et al., 2018). This is related to leadership and coaching, where a project manager with these skills motivates participants in the project process and equips them with the necessary knowledge and skills, all the while preparing the next generation of project managers through ongoing education (Woods & Abdon, 2011; Shokory & Surady, 2018; Spence et al., 2019). Resource management also refers to different kinds of resources, according to the Project Management Institute (2017) Resource management includes estimate of available resources, acquiring needed resources, creating team and individual competences, team management, and resource control to make sure that all available material resources are allotted and used as intended.

Project Communication Management:

To work on a project, communication is a requirement. According to the Project Management Institute (2017), project communication management is organizing, managing, and tracking communications. This is not only a procedure for exchanging information; it is a knowledge area that also includes procedures for timely and accurate planning, searching for, gathering, creating, storing, managing, controlling, monitoring, and, finally, using project information. According to Yap and Skitmore (2020), good communication might save costs significantly and shorten project duration.

Project Risk Management:

According to Denicol et al. and Rehman et al. (2020), every project entails some risks. An unpredictable event or circumstance is referred to as a risk if it has the potential to positively or negatively impact the project's goals. Risk management is therefore a part of project management. The following steps make up the risk management process, according to the Project Management Institute (2017): risk management planning, risk identification, qualitative and quantitative risk analysis, risk response planning, response execution, and process monitoring and control. Every risk has a certain chance of happening and has the potential to have an influence on a project, but high probability risks and high impact risks need to be closely watched (Darwish & Zubari, 2020). The goal of project management is to keep risk at a level that is acceptable to the project and its stakeholders because it is impossible to completely eliminate all risks.

Project Procurement Management:

According to the Project Management Institute (2017), project procurement management refers to the procedures required to get goods, services, or supplies from parties other than the project team. The most advantageous supplier is chosen (whose price does not always have to be the lowest) by properly preparing and planning procurement, carrying out procurement, and controlling procurement (Lent, 2013; Owusu et al., 2020; Rane et al., 2019). This stage of project management is used to make sure the project is run effectively, sustainably, and lawfully.

Project Stakeholder Management:

The most recent PMKA is Project Stakeholder Management (Project Management Institute, 2017). A project doesn't exist for itself; rather, it exists for certain stakeholders, such as a sponsor or owner who wants to profit from the project or a client who will use (and pay for) the project's deliverables. Managers require more than just technical expertise to complete a project successfully; they also need to be able to recognize stakeholders and establish and foster strong bonds with them. Stakeholder involvement in a project can be increased through a variety of ways. The project management plan can be developed with the help of stakeholders, and they can also approve changes to the project and take part in the supervisory board for change as well as establish boundaries (Jayasuriya et al., 2020; Project Management Institute, 2017).

Importance of Project Management Knowledge Area:

Project management knowledge area is important because it provides a framework for managing projects effectively and efficiently. It helps project managers to identify the key areas of a project and develop strategies to manage these areas. The knowledge area provides a common language, standards, and techniques that ensure consistency and clarity in project management. It helps project managers to monitor and control the project effectively, identify and resolve issues, and deliver projects that meet the expectations and needs of stakeholders.

Project management knowledge area is essential for managing successful projects. It provides a framework for managing different aspects of a project, ensuring consistency, and clarity in project management. Each knowledge area has its own set of processes and techniques that are crucial for effective project management. The knowledge area provides project managers with tools and techniques to ensure that the project is delivered on time, within budget, and to the satisfaction of stakeholders.

2.3. Project Success and Failure

2.3.1. project Success

The concept of project success is broad and multifaceted, and researchers have studied it extensively over the last few decades. The definition of project success is examined in this literature review. According to Morteza & Kamyar (2009), the term "Success" has several different definitions. Different stakeholders have different perspectives on success. It takes diverse forms in different states, localities, and population groupings since there is such a wide variety of people with various viewpoints. According to Dvir et al., a project is considered successful if it stays within its allocated spending limit and completion date, even if other requirements, like client needs or a successful commercialization process, were not accomplished.

The success of projects nowadays is influenced by three factors: applied methodology, project participants, and organizational context. S. Spalek (2014). Identifying a project's success is one of the most frequent problems in project management. Different project stakeholders may have different perspectives about what constitutes a project's successful conclusion and what elements are most crucial. (PMI 2017). From the standpoint of project management, success is defined as the project being completed on schedule, within budget, and in a functional manner that satisfies

the intended mission and planned objectives as well as the stakeholder expectations. Othman and El-Sokhn (2014).

Project management inputs that might directly or indirectly contribute to project success are known as critical success factors (CSFs) (Alias et al., 2014). Critical success factors (CSFs) are traits, circumstances, or variables that, under the right conditions, can significantly affect a project's success (Alias et al., 2014). They are viewed from the perspective of project management. Critical success variables must be managed effectively and efficiently in order for a project to succeed (Iram, 2016). According to Alias et al., (2014), in order to increase the chances of a project's success, the organization must first understand what the critical success factors are, then systematically and quantitatively assess these critical factors, anticipating potential effects, and then choose appropriate methods of dealing with them.

According to multiple academic research (Frefer et al., 2018), the success of a project depends on a number of important factors. Frefer et al. (2018) evaluated prior works by Pinto (1998), Kerzner (1987), and Pinto and Prescott (1988) to identify multiple sets of important success variables for project implementation, project outcomes, and project consistency. The authors also investigated the following development-related questions: "What factors lead to project management success?" What causes initiatives to succeed and what causes projects to succeed time and time again? (Frefer etal., 2018). Success criteria are described by Collins and Baccarini (2004) as success metrics, and success factors are characterized as success facilitators. They also claimed that the success criteria for a project are made up of two parts: product success and project management success (Collins and Baccarini, 2004).

2.3.2. Project Failure

Project failure is a common phenomenon in many fields and industries, especially in complex and uncertain environments. However, there is no consensus on how to define and measure project failure, as different authors adopt different perspectives and criteria. One of the most basic definitions of project failure is the inability to meet the project objectives in terms of time, cost, quality, or scope (El-sokhn and Othman, 2014). However, this definition does not capture the broader aspects of project success, such as user satisfaction, stakeholder expectations, business benefits, and social and environmental impacts. Therefore, some authors propose a more comprehensive definition of project failure that considers the alignment of the project outcomes

with the strategic goals and values of the organization and its stakeholders (Atkinson, 1999; Shenhar and Dvir, 2007).

The causes of project failure are diverse and interrelated, depending on the nature, context, and complexity of the project. Some of the common causes are 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). Other causes are poor communication and coordination, lack of stakeholder involvement and support, unrealistic expectations and assumptions, insufficient risk management, and ineffective leadership and governance (Kerzner, 2013; Serra and Kunc, 2015).

The impacts of project failure can be devastating for the project team, the organization, and the society at large. Project failure can result in wasted resources, lost opportunities, damaged reputation, reduced morale, legal disputes, and ethical issues (Kerzner, 2013). Moreover, project failure can have negative effects on the environment, such as pollution, deforestation, biodiversity loss, and climate change (Flyvbjerg et al., 2003). Therefore, it is imperative to prevent or minimize project failure by adopting appropriate strategies and practices.

2.4. Empirical literature review

Related articles and articles pertaining to the subject of the study will be covered in this section of the literature review. By using a cross-sectional strategy, as suggested by the survey design method,

Abdulrahman B. (2016) conducted research on project management practice: redefining theoretical challenge in the 21st century based on secondary data proposed that project management theory and practice are interdependent only when project management theories are beneficial and can be applied. The author suggested that using project management methods and standards can help in delivering successful output. The study also indicates that employing a project management approach could help eliminate wasted time and efforts that would have been directed at irrelevant tasks. The paper highlights the benefits of using a project management approach to derive tangible benefits for organizations.

Abdulrahman B. (2019) did also another study named Project Management: The Implication of Project Management Practices on Project Success in Saudi Arabia. A list of contracting businesses

was provided by the Riyadh Chamber of Commerce, and the sample was chosen from it. The data was examined after being examined in SPSS using percentages, means, and standard deviations. The results of this study shed light on the attitudes and concepts of Saudi project managers. Several tools are utilized in project management practice by both project managers and the businesses they hired. Many of the project managers who were targeted are aware of project management practice and are comfortable with the relevant terminologies used in project management tools and procedures, according to the results of the interviews. While not all feasible project management approaches were mentioned by name during the interviews, several of them were used by the project managers, giving the impression that they were already familiar with them.

The study was also motivated by earlier research results that showed that, despite possible uniformity in theoretical concepts, project management methods vary slightly among nations. The research is justified by the strategic relevance of building projects to national and sustainable development in Saudi Arabia and by the possibility that improper project management methods could have an adverse impact on project outcomes on the same level with its non-use. In order to address the difficulties experienced by projects in the area, it stresses the significance of adopting project management practices in KSA. the study also compares project management practices with project techniques and tools described in the PMBoK®. The study discovered that the project success criteria are significantly impacted by project management approaches.

Another study, The Case of Three Organizations by Sarfo M. (2007), was carried out to determine the impact of project management techniques on the execution of building projects. According to the study's findings, each organization's projects were assessed for their timeliness, cost, and quality in order to identify the general trend in their performance. 87.9% of the 66 projects the organizations submitted had issues with performance in terms of time and were completed earlier than expected. In addition, although 50.1% of the projects performed below trend, they were finished ahead of schedule. In terms of quality, only 15.2% of the projects underperformed the trend. A high level of satisfaction with the projects' overall quality was found. Furthermore, not every significant project management technique is linked to "Company A" projects functioning cost-effectively. However, it was shown that there was a positive correlation between all important project management techniques used by "Organization B" and the cost effectiveness of the associated projects. Comparatively, only one key project management practice operating within

"Organization C" has been discovered to have a negative link with the cost performance of the associated projects. Organization to organization differed in their use of each project management technique that significantly affected how much each project cost.

More over the analysis of this study discovered substantial variations in schedule and cost performance between project categories belonging to various businesses, but there were no notable variations in quality performance. The author studied the correlation between project management procedures and project performance was ascertained using multiple regression analysis. The study comes to the conclusion that project management techniques have a considerable impact on project performance, and the practices that have an impact are different for each business and each project.

Another study by Zarina A., Zarita A., and Muhammad F. (2012) on project management towards best practices in the Malaysian construction industry demonstrated that project managers should prioritize enhancing their knowledge, abilities, and personality traits in order to reach best practices. The report also emphasizes the significance of interpersonal and problem-solving abilities in project management, as well as the difficulties in handling modification requests and securing authority approval.

A supporting empirical research of project management 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 was place at the ideal time, and the project management process utilized during the initiation phase had the good fortune of outlining the project's goals in a straightforward, clear, and comprehensive statement. The study also discovered that there is a chance of determining the project's overall timeline and budget, that the project schedule is regularly updated, incorporating unplanned work as needed, that effective team meetings are held with a stated agenda, that performance reports are made for every activity in accordance with plan, that quality assurance and scope verifications are properly made, and that the overall change is controlled to provide an appropriate time.

Additionally, according to a study by Kerzner (2013), the successful application of knowledge fields is a key factor in project success. To guarantee that projects are finished on schedule, within budget, and to the requisite quality standards, each of the ten knowledge areas is crucial. Furthermore, the study reveals that an in-depth awareness of project management knowledge areas can greatly minimize the chance of project failure. Similarly, Shenhar et al. (2001) discovered that

the level of skill and experience in project management knowledge areas has a strong influence on project success. According to the research, organizations that invest in the development of project management knowledge domains outperform those that do not.

2.4. Conceptual framework

The proposed framework for this study is shown in Figure. It depicts evaluating project management practices using the 10 project management knowledge areas.

Fig 2: Conceptual framework

Source: Project Management | Translational Research Office (TRO) - UCL – University College London

Chapter 3
Methodology

The objective of this chapter is to give a summary of the methodological techniques and study design used to evaluate the various project management practices.

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). This study was conducted using a descriptive research design to describe or assess the project management practices of Core Consulting Engineers Plc. Typically, descriptive research designs focus on describing a phenomenon's properties. It can be applied to make estimations of the percentages of a population that exhibit these traits (Cooper and Schindler, 2014). As a result, I think that this design makes it possible to pinpoint and describe the participants' attitudes and opinions regarding the difficulties associated with project management practices.

The purpose of this study is to assess Core Consulting Engineers plc's approach to project management. The research will employ a variety of strategies. To gather the data gradually, a cross-sectional case investigation will be carried out as part of the study. The study will employ a range of research methodologies. Some of techniques for gathering qualitative data include closed-ended questions and the gathering, analysis, and interpretation of statistical data. According to Ghauri and Grönhaug (2005), qualitative research is adaptive in that it may be utilized to fill in the blanks of what is unknown or only partially known. Additionally, it aids in understanding the phenomenon being studied.

3.2. Population and sample size determination

3.2.1. Population

Employees of Core Consulting Engineers plc will be the target population, which is 70 in total, and participants from the project management department will be included in the study. Employees that randomly selected from different project as well as managers at all levels of the organization

will participate in the study. Other support staff members whose everyday tasks are impacted by project management practices were among the respondents at lower levels.

3.2.2. Sample Size Determination

Since it would be easier to examine a smaller subset of the population due to time, cost, and accessibility than the entire population, a sample size of respondents will be chosen from the workforce of Core Consulting Engineers plc, which includes staff and management. The sample will be chosen at random from the entire employee population of the organization. As a result, the sample size will be selected to accurately reflect the total population. The sample size for this study will be chosen using Yamane's Statistical Formula as follows:

$$n=\frac{N}{1+N(e^{(2)})}$$

Where n = sample size

N = population of the study

e = % level of significance or margin of tolerable error.

The researcher will consider a 5% level of significance or margin of tolerance error, and the secrecy level is 95%. 60 employees will make up the study's sample size after using the procedure above to estimate the population's sample size.

$$n = \frac{1}{1+70(0.05^2)}$$

$n=60$

3.3. Data Gathering Tool

The primary data is collected using self-administered questioner. The questioner was prepared based on the ten-knowledge area of project management. The company's work processes, rules, guidelines, forms, and other papers that are connected to project management practice would also be employed as a source for the secondary data. A questionnaire will be used to collect the main information. There are open-ended and closed-ended questions. This form of data collection is fairly common, particularly in significant investigations, according to Kothari (2004).

3.4. Method of Data Analysis

The information collected was organized and processed before being analyzed with SPSS (version 26) software. The 'Likert scale' was used to collect data on project management knowledge areas, with responses ranging from 'strongly agree' to 'strongly disagree'. To examine the organization's project management practices, the total mean value and percentage from each factor in a specific project management knowledge area are employed. Tables, and text presentations was used to present the findings from descriptive statistics including mean, standard deviation, frequency, and percentage.

3.5. Validity and Reliability of the Study

In qualitative research, the researcher is often the tool used to gather data. Because of this, if problems with researcher bias and competency are not addressed, it could significantly affect the validity of the findings. Even the sheer presence of a researcher may have an impact on how reliable the information the responder provides may be. Participants could exaggerate some details if the researcher is present. The researcher needs to promote social interaction that would not otherwise occur in order to solve this problem. Since training to conduct interviews or be a researcher is challenging to come by, the researcher will put a lot of time and effort into constructing the interview questions. Inadvertent mistakes at various phases of the research process are less likely as a result.

Generally accepted research standards state that a tool is legitimate if it accurately fulfils the goal for which it was designed and assesses the variables for which it was intended to be used. Professionals were asked to judge the questionnaire's appropriateness and provide overall evaluations in order to guarantee the instrument's face, content, and validity. On the other hand, reliability refers to the accuracy of data that has been gathered. Cronbach's alpha is a reliability coefficient. In 1951, Lee Cronbach gave it its initial name because he wanted to keep on with more coefficients. The measurements can be seen of as an expansion of the Kuder-Richardson Formula. In order to determine whether the instrument used in this research was reliable, a reliable analysis was performed, and the outcome is presented as follows.

Table 3.1 Cronbach's alpha, coefficient of reliability

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 computation

Sekaran (2003) and (Uma & Bougie, 2016) suggest that the Cronbach's alpha method can measure reliability by assigning values to different levels of quality. Values below 0.6 are poor, values around 0.7 are acceptable, and values above 0.8 are good. The closer the reliability coefficient is to 1, the better it is. Table 3.1 shows the reliability of the questionnaire for this study paradigms and indicates that the proposed concepts have a fairly good reliability, with a Cronbach's alpha value between 0.66 and 0.867, which is satisfactory.

3.6. Ethical Consideration

The confidentiality of information pertaining to the respondents and organization will be protected in this study as an ethical consideration. Additionally, the data collected will only be utilized for this study; it will not be shared with anyone else or put to any other uses. The confidentiality and secrecy of the voluntary respondents will also be maintained. Therefore, all potential ethical viewpoints will be considered in the study.

Chapter 4
Result and discussion

4.1. Introduction

This chapter presents the obtained data's results and interpretation. There are two parts to it. The first section discusses the demographic information about the respondents, including their sex, age, level of education, employment history, and position. The study's primary component, the analysis and interpretation of data obtained from a questionnaire about Core Consulting Engineers Plc's project management practices in road construction, is covered in the second section.

The statistical tool used for the analysis and presentation of data in this study was the Statistical Package for the Social Sciences (SPSS) version 26. Results are reported in relation to the practice on the ten-knowledge area of project management. The study uses descriptive analysis Using a questionnaire design to address the company practice and this study used a five-point Likert scale. A total of 60 questionnaires were distributed, and 60 of them were collected with no missing data. This response rate was acceptable for drawing conclusions about the company's project management practices. The number of questionnaires that were gathered is therefore the basis for the analysis of this study. The Likert type scale of 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), and 5 (Strongly Agree) is utilized to represent the data. By adopting a popular Scott criterion, a mean value is employed to analyses the data. According to Scott's criterion, a mean value between 2.9 and 3.2 is regarded neutral, a mean over 3.2 is considered agree, and a mean up to 2.8 is considered disagree (Scott, 1999).

4.2. Demographic Data

This section presents the respondents' characteristics. Respondent characteristics considered in this section include gender, age, educational background, and experience in road construction projects. The demographic information is required to classify and understand the overall distribution of the respondent. for illustration the researcher believed that respondents with better academic credentials and positions tended to provide more in-depth information about the topics under assessment.

Table 4.1 Demographic characteristic of the respondent

No	Item	N=60	Frequency	Percent
1	Gender of the respondent	Male	42	70
		Female	18	30
2	Age group of respondents	below 30	27	45
		30-40	18	30
		40-50	15	25
		above 50		
3	Job categories of respondent	project coordinator	2	3.3
		project manager	6	10
		project member	20	33.3
		support staff	32	53.3
4	Educational background of respondent	Diploma	8	13.3
		Degree	38	63.3
		Masters	14	23.3
		PhD	0	0
5	Work experience of the respondents	0-5	26	43.3
		5-10	14	23.3
		10-15	18	30
		above 15	2	3.3

Source: own data survey

As regards to the distribution of the participants' sexual orientations, out of the 60 (100%) respondents, 42 (70%) were men and 18 (30%), women. There was no missed response. As seen in Table 4.1, men made up the majority of respondents (70%), while women made up the

remaining 30% there are more than twice as many male respondents as female respondents. Male personnel are far more frequent than female employees in road construction projects

According to the age category of respondents in the table above (4.1), there are 27 (45% of respondents) who are under 30, 18 (30%) who are between 30 and 40, and 15 (25%) who are between 41 and 50. This shows that the majority of the groups are under 30 years old and with 30 to 40 years old making up more than half of the age categories. The majority of replies are therefore young and of a productive age. Table (4.1) also shows that 2 (3.3% of respondents) are a project coordinator, 6 (10%) are a project manager, 20 (33.3%), are a project member, and 32 (53.3%), are support personnel. Therefore, the majority of respondents are support member (53.3%) and project members (33.3%), respectively. Where project members are professional that lead their department and support staff are professional staff that work under each department which are taken from the organizational structure of the company.

The educational level of respondents ranged from a diploma to a master's degree and above, as shown in table (4.1). A total of 38 respondents (63.3%) has a BA degree, 8 respondents (13.3%) have a college diploma, and 14 respondents (23.3%) have a master's degree or above. This demonstrates that among respondents, BA degrees are held by the majority of respondents. The majority of respondents are aware of the importance of providing proper information, and we can also observe that the majority of employees have a BA degree or above and they are professionals. Moreover according to table (4.1), respondents that served from 0-5 years are 26 (43.3%), from 6-10 years are 14 (23.3%), from 11-15 years are 18 (30%), and more than 15 years are 2 (3.3%). As a result, the majority of respondents had served for 0-5 years (43.3%) and 11-15 years (30%) correspondingly.

4.3. Assessment of project management practice

The second section handles the research -related question. This questioner is suitable for project management practice on the 10 project management knowledge areas. It includes five questions about project integration management, five questions about project scope management, four questions about project schedule management, four questions about project cost management, four questions about project quality management, four questions about project resource management, four questions about project communication management, four questions about project risk

management, five questions about project procurement management, five questions about project stakeholder management, and eight questions about project success management. A total of 56 question on the questioner. The following Likert scale method used to direct the respondents: Strongly Disagree =1, Disagree =2, Neutral =3, Agree =4 and Strongly Agree =5

The study data was analyzed using descriptive statistics such as frequency, mean, percentage, and standard deviation.

4.3.1 Assessment of project integration management

Table 4.2: Project integration management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	Project Manager is always assigned early in the projects	strongly disagree	0	0	3.95	0.872
		disagree	5	8.3		
		neutral	9	15		
		agree	30	50		
		strongly agree	16	26.7		
2	There were efficient change managements practice in project	strongly disagree	2	3.3	3.38	0.958
		disagree	7	11.7		
		neutral	24	40		
		agree	20	33.3		
		strongly agree	7	11.7		
3	Single and cohesive project management plan was developed	strongly disagree	1	1.7	3.42	0.869
		disagree	7	11.7		
		neutral	23	38.3		
		agree	24	40		

		strongly agree	5	8.3		
4	Projects will be finished with in the scheduled time	strongly disagree	1	1.7	3.63	0.802
		disagree	3	5		
		neutral	19	31.7		
		agree	31	51.7		
		strongly agree	6	10		
5	There is Proper monitoring and reporting scheme in the company	strongly disagree	1	1.7	3.55	1.032
		disagree	10	16.7		
		neutral	15	25		
		agree	23	38.3		
		strongly agree	11	18.3		
	Overall				3.5867	0.60041

Source: own data survey

Project integration management connects all the project's components into a single entity to ensure that the finished goods or services are delivered within budget, on schedule, and to the desired standard of quality. The responses for the project integration management practice used by Core Consulting Engineers Plc are shown in Table (4.2). In response to the initial question about whether the project manager is always assigned early on, none of the respondents strongly disagreed, 5 (8.3%) disagreed, 9 (15%) selected neutral, 30 (50%) agreed, and 16 (26.7%) strongly agreed. The majority of respondents (46, or 76.7%) agree that the project manager is appointed early in the project. In response to the second question about the effectiveness of change management practice in project, 2(3.3%) of the respondents strongly disagreed, 7 (11.7%) disagreed, 24 (40%) selected neutral, 20 (33.3%) agreed, and 7 (11.7%) strongly agreed. The majority of respondents (27, or 45%) agree that there is efficient change management practice in core consulting engineers plc.

In response to the third question about having single and coherent project management plan in project, 1(1.7%) of the respondents strongly disagreed, 7 (11.7%) disagreed, 23 (38.3%) selected neutral, 24 (40%) agreed, and 5 (8.3%) strongly agreed. The majority of respondents (29, or 48.3%) agree that there is single and coherent project management plan in project. In response to the fourth question about Projects will be finished with in the scheduled time, 1(1.7%) of the respondents strongly disagreed, 3 (5%) disagreed, 19 (31.7%) selected neutral, 31 (51.7%) agreed, and 6 (10%) strongly agreed. The majority of respondents (37, or 61.7%) agree that project will be finished in the scheduled time. In response to the last question about Proper monitoring and reporting arrangement in the company, 1(1.7%) of the respondents strongly disagreed, 10 (16.7%) disagreed, 15 (25%) selected neutral, 23 (38.3%) agreed, and 11 (18.3%) strongly agreed. The majority of respondents (44, or 56.6%) agree that there is proper monitoring and evaluation scheme in the organization.

Additionally, table (4.2) showed that the mean and standard deviation of the entire project integration management assessment were 3.587 and 0.6, respectively. The highest score for each item is "the project manager is assigned early in the project," with a mean of 3.95 and a standard deviation of 0.872. This is followed by "project finished on schedule" with a mean of 3.63 and an SD of 0.802, and then "there is a proper monitoring and reporting scheme in projects" with a mean of 3.55 and an SD of 1.032. The next is "The project has a single and organized project management plan," with a mean of 3.42 and a SD of 0.869. Finally, "the organization has effective change management practices in projects," with the mean = 3.38 and SD = 0.958. So according to the findings, project integration management is effectively implemented in the organization, as evidenced by the mean of 3.587 and SD of 0.6.

4.3.2 Assessment of project scope management

Defining the project scope from the start is essential for ensuring stakeholder satisfaction with the deliverables and avoiding misunderstandings about the specific elements of the deliverables.

Table 4.3 assessment of project scope management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	At the start of the project the requirements of the stakeholder's need are always determined and documented	strongly disagree	4	6.7	3.6	1.092
		Disagree	4	6.7		
		Neutral	16	26.7		
		Agree	24	40		
		strongly agree	12	20		
2	Project scope statement that details project scope, boundaries, acceptance criteria and project exclusions were defined.	strongly disagree	2	3.3	3.18	1
		Disagree	14	23.3		
		Neutral	20	33.3		
		Agree	19	31.7		
		strongly agree	5	8.3		
3	Work Break Down (scope baseline) was created	strongly disagree	0	0	3.58	1.013
		Disagree	11	18.3		
		Neutral	15	25		
		Agree	22	36.7		
		strongly agree	12	20		
4	A plan that detail how the project scope will be defined, validated, and controlled was generated	strongly disagree	1	1.7	3.53	1.096
		Disagree	13	21.7		
		Neutral	11	18.3		
		Agree	23	38.3		
		strongly agree	12	20		
5	Scope validation (by the customer or the user) were done for each deliverable	strongly disagree	1	1.7	3.23	1.015
		Disagree	16	26.7		
		Neutral	17	28.3		
		Agree	20	33.3		
		strongly agree	6	10		
	Overall				3.4267	0.72483

Source: own data survey

Table (4.3) depicts the organization project scope management practice. In response to the initial question about whether the requirements of the stakeholder's need are always determined and documented early on project start, 4(6.7%) of the respondents strongly disagreed, 4 (6.7%) disagreed, 16 (26.7%) selected neutral, 24 (40%) agreed, and 12 (20%) strongly agreed. The majority of respondents (36, or 60%) agree that stakeholder requirement is always determined and documented early in the project. In response to the second question about the Project scope statement that details project scope, boundaries, acceptance criteria and project exclusions were defined, 2(3.3%) of the respondents strongly disagreed, 14 (23.3%) disagreed, 20 (33.3%) selected neutral, 19 (31.7%) agreed, and 5 (8.3%) strongly agreed. The majority of respondents (24, or 40%) agree that there is a good project scope statement management practice in core consulting engineers plc.

In response to the third question about having Work Break Down structure in project, none of the respondents strongly disagreed, 11 (18.3%) disagreed, 15 (25%) selected neutral, 22 (36.7%) agreed, and 12 (20%) strongly agreed. The majority of respondents (32, or 56.7%) agree that there is work breakdown structure for the project. In response to the fourth question about Projects scope plan, 1(1.7%) of the respondents strongly disagreed, 13 (21.7%) disagreed, 11 (18.3%) selected neutral, 23 (38.2%) agreed, and 12 (20%) strongly agreed. The majority of respondents (35, or 58.2%) agree that project scope will be defined, validated, and controlled with respect to its plan. In response to the last question about Proper scope validation by the customer or user, 1(1.7%) of the respondents strongly disagreed, 16 (26.7%) disagreed, 17 (28.3%) selected neutral, 20 (33.3%) agreed, and 6 (10%) strongly agreed. The majority of respondents (26, or 43.3%) agree that there is proper scope validation by the customer or user for each deliverable in the organization.

Additionally, table (4.3) showed that the mean and standard deviation of the entire project scope management assessment were 3.427 and 0.724, respectively. The highest score for each item is "At the start of the project the requirements of the stakeholder's need is always determined and documented," with a mean of 3.6 and a standard deviation of 1.092. This is followed by "Work Break Down (scope baseline) was created" with a mean of 3.58 and an SD of 1.013, and then "A plan that detail how the project scope will be defined, validated, and controlled was generated" with a mean of 3.56 and an SD of 1.096. The next is "Scope validation (by the customer or the user) were done for each deliverable," with a mean of 3.23 and a SD of 1.015. Finally, "Project

scope statement that details project scope, boundaries, acceptance criteria and project exclusions were defined.," with the mean = 3.18 and SD = 1. So according to the findings, project scope management is effectively implemented in the organization, as evidenced by the mean of 3.427 and SD of 0.724.

4.3.3 Assessment of project schedule management

project schedule management is a crucial aspect of project management. It requires a combination of techniques, tools, and methodologies that enable project managers to develop, monitor, and control project schedules.

The results for Core Consulting Engineers Plc's project schedule management practice are shown in Table (4.4). In response to the initial question about List of activities to be executed were defined during planning and execution of projects, 1(1.7%) of the respondents strongly disagreed, 17 (23.3%) disagreed, 20 (33.3%) selected neutral, 10 (16.7%) agreed, and 12 (20%) strongly agreed. The majority of respondents (22, or 36.7%) agree that activities to be executed were defined during planning and execution of projects. In response to the second question about Activities were sequenced with time required for each of activities that were estimated, 4(6.7%) of the respondents strongly disagreed, 25 (41.7%) disagreed, 21 (35%) selected neutral, 9 (15%) agreed, and 1 (1.7%) strongly agreed. The majority of respondents (29, or 48.4%) disagree that Activities were sequenced with time required for each of activities that were estimated.

In response to the third question about There were schedule management plan developed for projects, 9(15) of the respondents strongly disagreed, 18 (30%) disagreed, 21 (35%) selected neutral, 11 (18.3%) agreed, and 1 (1.7%) strongly agreed. The majority of respondents (27, or 45%) disagree that There were schedule management plan developed for projects. In response to the last question about The changes from the project schedule were controlled, 14(23.3%) of the respondents strongly disagreed, 23 (38.3%) disagreed, 20 (33.3%) selected neutral, 2 (3.33%) agreed, and 1 (1.7%) strongly agreed. The majority of respondents (37, or 61.6%) disagree that The changes from the project schedule were controlled in the organization.

Table 4.4 Assessment of project schedule management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	List of activities to be executed were defined during planning and execution of projects	strongly disagree	1	1.7	3.25	1.061
		Disagree	17	28.3		
		Neutral	20	33.3		
		Agree	10	16.7		
		strongly agree	12	20		
2	Activities were sequenced with time required for each of activities that were estimated	strongly disagree	4	6.7	2.63	0.882
		Disagree	25	41.7		
		Neutral	21	35		
		Agree	9	15		
		strongly agree	1	1.7		
3	There was schedule management plan developed for projects	strongly disagree	9	15	2.62	1.01
		Disagree	18	30		
		Neutral	21	35		
		Agree	11	18.3		
		strongly agree	1	1.7		
4	The changes from the project schedule were controlled	strongly disagree	14	23.3	2.22	0.904
		Disagree	23	38.3		
		Neutral	20	33.3		
		Agree	2	3.3		
		strongly agree	1	1.7		
	Overall				2.68	0.68869

Source: own data survey

Additionally, table (4.4) showed that the mean and standard deviation of the entire project scope management assessment were 2.68 and 0.689, respectively. The highest score for each item is "List of activities to be executed were defined during planning and execution of projects," with a mean of 3.25 and a standard deviation of 1.061. This is followed by "Activities were sequenced with time required for each of activities that were estimated" with a mean of 2.63 and an SD of 0.882, and then "A plan that detail how the project scope will be defined, validated, and controlled was generated" with a mean of 2.52 and an SD of 1.01. Finally, "There were schedule management plan developed for projects," with a mean of 2.22 and a SD of 0.904. So according to the findings, project scope management is not effectively implemented in the organization, as evidenced by the mean of 2.68 and SD of 0.689.

4.3.4 Assessment of project cost management

Project cost management, which is an essential component of project management, is described as the procedures involved in estimating, budgeting, and controlling the costs spent throughout the course of a project. The result for the company's project cost management practice are shown in Table (4.5). In response to the initial question about The Cost estimate were in-line with agreed scope, none of the respondents strongly disagreed, 16 (26.7%) disagreed, 15 (25%) selected neutral, 29 (48.3%) agreed, and none of the respondent strongly agreed. The majority of respondents (29, or 48.3%) agree that Cost estimate were in-line with agreed scope. In response to the second question about A budget for the project (cost baseline) was assigned, 8(13.3%) of the respondents strongly disagreed, 17 (28.3%) disagreed, 23 (38.3%) selected neutral, 8 (13.3%) agreed, and 4 (6.7%) strongly agreed. The majority of respondents (25, or 41.6%) disagree that A budget for the project (cost baseline) was assigned.

In response to the third question about A cost management plan that detail how the project budget is estimated and controlled was generated, none of the respondents strongly disagreed, 8 (13.3%) disagreed, 30 (50%) selected neutral, 15 (25%) agreed, and 7 (11.7%) strongly agreed. The majority of respondents (22, or 36.7%) agree that There were A cost management plan that detail how the project budget is estimated and controlled was generated. In response to the last question about The Change in project cost was controlled, 1(1.7%) of the respondents strongly disagreed, 25 (41.7%) disagreed, 17 (28.3%) selected neutral, 12 (20%) agreed, and 5 (8.3%) strongly agreed.

The majority of respondents (26, or 43.4%) disagree that The Change in project cost was controlled in the organization

Table 4.5 Assessment of project cost management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	The Cost estimate were in-line with agreed scope	strongly disagree	0	0	3.22	0.846
		disagree	16	26.7		
		Neutral	15	25		
		Agree	29	48.3		
		strongly agree	0	0		
2	A budget for the project (cost baseline) was assigned	strongly disagree	8	13.3	2.72	1.075
		disagree	17	28.3		
		Neutral	23	38.3		
		Agree	8	13.3		
		strongly agree	4	6.7		
3	A cost management plan that detail how the project budget is estimated and controlled was generated	strongly disagree	0	0	3.35	0.86
		disagree	8	13.3		
		Neutral	30	50		
		Agree	15	25		
		strongly agree	7	11.7		
4	The Change in project cost was controlled	strongly disagree	1	1.7	2.92	1.013
		disagree	25	41.7		
		Neutral	17	28.3		
		Agree	12	20		
		strongly agree	5	8.3		
	Overall				3.05	0.6172

Source: own data survey

Additionally, table (4.5) showed that the mean and standard deviation of the entire project scope management assessment were 3.05 and 0.6172, respectively. The highest score for each item is " A cost management plan that detail how the project budget is estimated and controlled was generated," with a mean of 3.35 and a standard deviation of 0.86. This is followed by " The Cost estimate were in-line with agreed scope " with a mean of 3.22 and an SD of 0.846, and then " The Change in project cost was controlled" with a mean of 2.92 and an SD of 1.013. Finally, " A budget for the project (cost baseline) was assigned," with a mean of 2.72 and a SD of 1.075. So according to the findings, project cost management needs some change in the organization, as evidenced by the mean of 3.05 and SD of 0.6172.

4.3.5 Assessment of project quality management

The results for Core Consulting Engineers Plc's project cost management practice are shown in Table (4.6). In response to the initial question about Quality standards of the project were identified, none of the respondents strongly disagreed, 7 (11.7%) disagreed, 9 (15%) selected neutral, 24 (40%) agreed, and 20(33.3%) of the respondent strongly agreed. The majority of respondents (44, or 73.3%) agree that Quality standards of the project were identified. In response to the second question about Quality standards of the project were reviewed, 1(1.7%) of the respondents strongly disagreed, 11 (18.3%) disagreed, 18 (30%) selected neutral, 21 (35%) agreed, and 9 (15%) strongly agreed. The majority of respondents (30, or 50%) agree that Quality standards of the project were reviewed.

In response to the third question about Project performance were evaluated on regular basis, 4(6.7%) of the respondents strongly disagreed, 19 (31.7%) disagreed, 12 (20%) selected neutral, 13 (21.7%) agreed, and 12 (20%) strongly agreed. The majority of respondents (25, or 41.7%) agree that Project performance were evaluated on regular basis. In response to the last question about Results were monitored to check if they comply with the quality standards identified, none of the respondents strongly disagreed, 11 (18.3%) disagreed, 20 (33.3%) selected neutral, 17 (28.3%) agreed, and 12 (20%) strongly agreed. The majority of respondents (25, or 41.7%) agree that Results were monitored to check if they comply with the quality standards identified in the organization.

Table 4.6 Assessment of project quality management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	Quality standards of the project were identified	strongly disagree	0	0	3.95	0.982
		disagree	7	11.7		
		Neutral	9	15		
		Agree	24	40		
		strongly agree	20	33.3		
2	Quality standards of the project were reviewed	strongly disagree	1	1.7	3.43	1.015
		disagree	11	18.3		
		Neutral	18	30		
		Agree	21	35		
		strongly agree	9	15		
3	Project performance were evaluated on regular basis	strongly disagree	4	6.7	3.17	1.264
		disagree	19	31.7		
		Neutral	12	20		
		Agree	13	21.7		
		strongly agree	12	20		
4	Results were monitored to check if they comply with the quality standards identified	strongly disagree	0	0	3.5	1.017
		disagree	11	18.3		
		Neutral	20	33.3		
		Agree	17	28.3		
		strongly agree	12	20		
	Overall				3.5125	0.88708

Source: own data survey

Additionally, table (4.6) showed that the mean and standard deviation of the entire project scope management assessment were 3.5125 and 0.887, respectively. The highest score for each item is " Quality standards of the project were identified," with a mean of 3.95 and a standard deviation of 0.982. This is followed by " Results were monitored to check if they comply with the quality standards identified" with a mean of 3.5 and an SD of 1.017, and then " Quality standards of the project were reviewed" with a mean of 3.43 and an SD of 1.015. Finally, " Project performance were evaluated on regular basis," with a mean of 3.17 and a SD of 1.264. So according to the findings, project quality management effectively implemented in the organization, as evidenced by the mean of 3.5125 and SD of 0.887.

4.3.6 Assessment of project resource management

The results for Core Consulting Engineers Plc's project cost management practice are shown in Table (4.7). In response to the initial question about Resources for each activity was estimated, none of the respondents strongly disagreed, 6 (10%) disagreed, 29 (48.3%) selected neutral, 23 (38.3%) agreed, and 2(3.3) of the respondents strongly agreed. The majority of respondents (25, or 41.6%) agree that Resources for each activity was estimated. In response to the second question about Acquiring project resources were made on time, none of the respondents strongly disagreed, 2 (3.3%) disagreed, 27(45%) selected neutral, 27(45%) agreed, and 4 (6.7%) strongly agreed. The majority of respondents (31, or 51.7%) agree that Acquiring project resources were made on time.

In response to the third question about Project team was developed, 3(5%) of the respondents strongly disagreed, 12 (20%) disagreed, 33 (55%) selected neutral, 12 (20%) agreed, and none of the respondent strongly agreed. The majority of respondents (15, or 25%) disagree that Project team was developed. In response to the last question about Project team was managed and controlled, 3(5%) of the respondents strongly disagreed, (15, or 25%) disagreed, 24 (40%) selected neutral, 16 (26.7%) agreed, and 2(3.3%) strongly agreed. The majority of respondents (24, or 40%) neutral on Project team was managed and controlled in the organization.

Table 4.7 Assessment of project resource management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	Resources for each activity was estimated	strongly disagree	0	0	3.35	0.709
		disagree	6	10		
		neutral	29	48.3		
		Agree	23	38.3		
		strongly agree	2	3.3		
2	Acquiring project resources were made on time	strongly disagree	0	0	3.55	0.675
		disagree	2	3.3		
		neutral	27	45		
		Agree	27	45		
		strongly agree	4	6.7		
3	Project team was developed	strongly disagree	3	5	2.9	0.775
		disagree	12	20		
		neutral	33	55		
		Agree	12	20		
		strongly agree	0	0		
4	Project team was managed and controlled	strongly disagree	3	5	2.98	0.93
		disagree	15	25		
		neutral	24	40		
		Agree	16	26.7		
		strongly agree	2	3.3		
	Overall				3.1958	0.54285

Source: own data survey

Additionally, table (4.7) showed that the mean and standard deviation of the entire project scope management assessment were 3.196 and 0.543, respectively. The highest score for each item is " Acquiring project resources were made on time," with a mean of 3.55 and a standard deviation of 0.675. This is followed by " Resources for each activity was estimated" with a mean of 3.35 and an SD of 0.709, and then " Project team was managed and controlled" with a mean of 2.98 and an SD of 0.93. Finally, " Project team was developed," with a mean of 2.9 and a SD of 0.775. So according to the findings, project resource management is in good trend but it needs some change, as evidenced by the mean of 3.19 and SD of 0.543.

4.3.7 Assessment of project communication management

Table (4.8) displays the responses for Core Consulting Engineers Plc's project integration management technique. In response to the initial question about information and communication needed for the project were determined, none of the respondents strongly disagreed, 26 (43.3%) disagreed, 12 (20%) selected neutral, 14 (23.3%) agreed, and 8 (13.3%) strongly agreed. The majority of respondents (26, or 43.3%) disagree that information and communication needed for the project were determined. In response to the second question about Making the required information available to project stakeholders were made on time, none of the respondents strongly disagreed, 15 (25%) disagreed, 26 (43.3%) selected neutral, 7 (11.7%) agreed, and 12 (20%) strongly agreed. The majority of respondents (29, or 31.7%) agree that making the required information available to project stakeholders were made on time.

In response to the third question about Collecting and disseminating performance information were made on time, none of the respondents strongly disagreed, 16 (26.7%) disagreed, 22 (36.7%) selected neutral, 16 (26.7%) agreed, and 6 (10%) strongly agreed. The majority of respondents (22, or 36.7%) agree that collecting and disseminating performance information were made on time. In response to the last question about Communication between stakeholders were controlled, 1(1.7%) of the respondents strongly disagreed, 31 (51.7%) disagreed, 15 (25%) selected neutral, 9 (15%) agreed, and 4 (6.7%) strongly agreed. The majority of respondents (32, or 53.4%) disagree that there is Communication between stakeholders were controlled in the organization.

Table 4.8 Assessment of project communication management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	The information and communication needed for the project were determined	strongly disagree	0	0	3.07	1.103
		disagree	26	43.3		
		Neutral	12	20		
		Agree	14	23.3		
		strongly agree	8	13.3		
2	Making the required information available to project stakeholders were made on time	strongly disagree	0	0	3.27	1.056
		disagree	15	25		
		Neutral	26	43.3		
		Agree	7	11.7		
		strongly agree	12	20		
3	Collecting and disseminating performance information were made on time	strongly disagree	0	0	3.2	0.953
		disagree	16	26.7		
		Neutral	22	36.7		
		Agree	16	26.7		
		strongly agree	6	10		
4	Communication between stakeholders were controlled	strongly disagree	1	1.7	2.73	0.972
		disagree	31	51.7		
		Neutral	15	25		
		Agree	9	15		
		strongly agree	4	6.7		
	Overall				3.0667	0.75894

Source: own data survey

Additionally, table (4.8) showed that the mean and standard deviation of the entire project integration management assessment were 3.0667 and 0.75894, respectively. The highest score for each item is "Making the required information available to project stakeholders were made on time," with a mean of 3.27 and a standard deviation of 1.056. The next is "Collecting and disseminating performance information were made on time," with a mean of 3.2 and a SD of 0.953. The next is "The information and communication needed for the project were determined," with a mean of 3.07 and a SD of 1.103. Finally, "Communication between stakeholders were controlled," with the mean = 2.73 and SD = 0.972. So according to the findings, project communication management is implemented but it need improvement in the organization, as evidenced by the mean of 3.0667 and SD of 0.75894.

4.3.8 Assessment of project risk management

The results for Core Consulting Engineers Plc's project risk management practice are shown in Table (4.9). In response to the initial question about Risks were identified and labeled in risk register, 6 (10%) of the respondents strongly disagreed, 31 (51.7%) disagreed, 4 (6.7%) selected neutral, 13(21.7) agreed, and 6 (10%) of the respondent strongly agreed. The majority of respondents (37, or 61.7%) agree that Risks were identified and labeled in risk register. In response to the second question about for the identified risks response tactics were developed, 4 (6.7%) of the respondents strongly disagreed, 19 (31.7%) disagreed, 26(43.3%) selected neutral, 4(6.7%) agreed, and 7 (11.7%) strongly agreed. The majority of respondents (31, or 51.7%) agree that Acquiring project resources were made on time.

In response to the third question about the identified risks were monitored and controlled, none of the respondents strongly disagreed, 15 (25%) disagreed, 29 (48.3%) selected neutral, 14 (23.3%) agreed, and 2(3.3%) of the respondent strongly agreed. The majority of respondents (16, or 26.6%) agree that the identified risks were monitored and controlled. In response to the last question about Proactive risk responses were made, 5(8.3%) of the respondents strongly disagreed, (31, or 26.6%) disagreed, 14 (23.3%) selected neutral, 6 (10%) agreed, and 4(6.7%) strongly agreed. The majority of respondents (36, or 60%) disagree on Proactive risk responses were made in the organization.

Table 4.9 Assessment of project risk management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	Risks were identified and labeled in risk register	strongly disagree	6	10	2.7	1.212
		disagree	31	51.7		
		neutral	4	6.7		
		agree	13	21.7		
		strongly agree	6	10		
2	For the identified risks response tactics were developed	strongly disagree	4	6.7	2.85	1.055
		disagree	19	31.7		
		neutral	26	43.3		
		agree	4	6.7		
		strongly agree	7	11.7		
3	The identified risks were monitored and controlled	strongly disagree	O	O	2.85	0.777
		disagree	21	35		
		neutral	29	48.3		
		agree	8	13.3		
		strongly agree	2	3.3		
4	Proactive risk responses were made	strongly disagree	5	8.3	2.55	1.016
		disagree	31	51.7		
		neutral	14	23.3		
		agree	6	10		
		strongly agree	4	6.7		
	Overall				2.7375	0.83922

Source: own data survey

Additionally, table (4.9) showed that the mean and standard deviation of the entire project risk management assessment were 2.7875 and 0.83922, respectively. The highest score for each item is "For the identified risks response tactics were developed," with a mean of 3.05 and a standard deviation of 0.777. This is followed by "The identified risks were monitored and controlled" with a mean of 2.85 and an SD of 1.055, and then " Risks were identified and labeled in risk register" with a mean of 2.7 and an SD of 1.212. Finally, " Proactive risk responses were made," with a mean of 2.55 and a SD of 1.016. So according to the findings, project risk management is in unsatisfactory so it needs some change, as evidenced by the mean of 3.19 and SD of 0.543.

4.3.9 Assessment of project procurement management

Table (4.10) displays the responses for Core Consulting Engineers Plc's project procurement management practice. In response to the initial question about Procurement Management plan was defined, none of the respondents strongly disagreed, 4 (6.7%) disagreed, 16 (26.7%) selected neutral, 27 (45%) agreed, and 13 (21.7%) strongly agreed. The majority of respondents (40, or 66.7%) agree that procurement Management plan was defined. In response to the second question about Appropriate quotations, bid, offers or proposal were obtained, 2(3.3%) of the respondents strongly disagreed, 9 (15%) disagreed, 26 (43.3%) selected neutral, 10 (16.7%) agreed, and 13 (21.7%) strongly agreed. The majority of respondents (23, or 38.4%) agree that their appropriate quotations, bid, offers or proposal were obtained in core consulting engineers plc.

In response to the third question about Potential sources were identified in project, 2(3.3%) of the respondents strongly disagreed, 7 (11.7%) disagreed, 19 (31.7%) selected neutral, 21 (35%) agreed, and 11 (18.3%) strongly agreed. The majority of respondents (32, or 53.3%) agree that Potential sources were identified. In response to the fourth question about Procurements were conducted as planned, none of the respondents strongly disagreed, 6(10%) disagreed, 14 (23.3%) selected neutral, 27 (45%) agreed, and 13 (21.7%) strongly agreed. The majority of respondents (40, or 66.7%) agree that procurements were conducted as planned. In response to the last question about Contract was completed and settled properly, 2(3.3%) of the respondents strongly disagreed, 7 (11.7%) disagreed, 33 (55%) selected neutral, 213 (21.7%) agreed, and 5 (8.3%) strongly agreed. The majority of respondents (18, or 30%) agree that there is proper monitoring and evaluation scheme in the organization.

Table 4.10 Assessment of project procurement management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	Procurement Management plan was defined	strongly disagree	0	0	3.82	0.854
		disagree	4	6.7		
		neutral	16	26.7		
		agree	27	45		
		strongly agree	13	21.7		
2	Appropriate quotations, bid, offers or proposal were obtained	strongly disagree	2	3.3	3.38	1.091
		disagree	9	15		
		neutral	26	43.3		
		agree	10	16.7		
		strongly agree	13	21.7		
3	Potential sources were identified	strongly disagree	2	3.3	3.53	1.033
		disagree	7	11.7		
		neutral	19	31.7		
		agree	21	35		
		strongly agree	11	18.3		
4	Procurements were conducted as planned	strongly disagree	0	0	3.78	0.904
		disagree	6	10		
		neutral	14	23.3		
		agree	27	45		
		strongly agree	13	21.7		
5	Contract was completed and settled properly	strongly disagree	2	3.3	3.2	0.879
		disagree	7	11.7		
		neutral	33	55		
		agree	13	21.7		
		strongly agree	5	8.3		
	Overall				3.5433	0.56699

Source: own data survey

Additionally, table (4.10) showed that the mean and standard deviation of the entire project integration management assessment were 3.5433 and 0.56699, respectively. The highest score for each item is " Procurement Management plan was defined," with a mean of 3.82 and a standard deviation of 0.854. This is followed by " Procurements were conducted as planned " with a mean of 3.78 and an SD of 0.854, and then "Potential sources were identified" with a mean of 3.53 and an SD of 1.033. The next is "appropriate quotations, bid, offers or proposal were obtained," with a mean of 3.38 and a SD of 1.091. Finally, "Contract was completed and settled properly," with the mean = 3.2 and SD = 0.879. Accordingly, project integration management is effectively implemented in the organization, as evidenced by the mean of 3.5433 and SD of 0.56699.

4.3.10 Assessment of project stakeholder management

Table 4.11 shows the responses for Core Consulting Engineers Plc's project stakeholder management practice. The table provides the responses to five questions. The first question is about whether the stakeholders in the project were identified. None of the respondents strongly disagreed, 3 (5%) disagreed, 17 (28.3%) selected neutral, 25 (41.7%) agreed, and 15 (25%) strongly agreed. Most of the respondents (40, or 66.7%) believe that the stakeholders in the project were identified. The second question is about whether the stakeholder engagement was planned. None of the respondents strongly disagreed, 6 (10%) disagreed, 20 (33.3%) selected neutral, 28 (46.7%) agreed, and 6 (10%) strongly agreed. More than half of the respondents (34, or 56.7%) believe that the stakeholder engagement was planned in core consulting engineers plc.

In response to the third question about the communication between project stakeholders were effective, 1(1.7%) of the respondents strongly disagreed, 6 (10%) disagreed, 13 (21.7%) selected neutral, 29 (48.3%) agreed, and 11 (18.3%) strongly agreed. The majority of respondents (40, or 66.7%) agree that the communication between project stakeholders were effective. In response to the fourth question about Stakeholders engagement was controlled, 4 (6.7%) of the respondents strongly disagreed, 6(10%) disagreed, 21 (35%) selected neutral, 22 (36.7%) agreed, and 7 (11.7%) strongly agreed. The majority of respondents (29, or 48.4%) agree that Stakeholders engagement was controlled. In response to the last question about Project progress was reviewed frequently with the customer, none of the respondents strongly disagreed, 4 (6.7%) disagreed, 21 (35%) selected neutral, 20 (33.3%) agreed, and 15 (25%) strongly agreed. The majority of respondents (35, or 58.3%) agree that Project progress was reviewed frequently with the customer.

Table 4.11 Assessment of project stakeholder management

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	Stakeholders in the project were identified	strongly disagree	0	0	3.87	0.853
		Disagree	3	5		
		Neutral	17	28.3		
		Agree	25	41.7		
		strongly agree	15	25		
2	Stakeholders' engagement was planned	strongly disagree	0	0	3.57	0.81
		Disagree	6	10		
		Neutral	20	33.3		
		Agree	28	46.7		
		strongly agree	6	10		
3	The communication between project stakeholders were effective	strongly disagree	1	1.7	3.72	0.94
		Disagree	6	10		
		Neutral	13	21.7		
		Agree	29	48.3		
		strongly agree	11	18.3		
4	Stakeholders' engagement was controlled	strongly disagree	4	6.7	3.37	1.041
		Disagree	6	10		
		Neutral	21	35		
		Agree	22	36.7		
		strongly agree	7	11.7		
5	Project progress was reviewed frequently with the customer	strongly disagree	0	0	3.77	0.909
		Disagree	4	6.7		
		Neutral	21	35		
		Agree	20	33.3		
		strongly agree	15	25		
	Overall				3.6567	0.64424

Source: own data survey

Additionally, table (4.11) showed that the mean and standard deviation of the entire project integration management assessment were 3.6567 and 0.64424, respectively. The highest score for each item is " Stakeholders in the project were identified " with a mean of 3.87 and a standard deviation of 0.853. This is followed by " Project progress was reviewed frequently with the customer" with a mean of 3.77 and an SD of 0.909, and then "The communication between project stakeholders were effective" with a mean of 3.72 and an SD of 0.94. The next is "appropriate quotations, bid, offers or proposal were obtained," with a mean of 3.57 and a SD of 0.81. Finally, " Stakeholders engagement were planned," with the mean = 3.37 and SD = 1.041. So according to the findings, project stakeholder management is effectively implemented in the organization, as evidenced by the mean of 3.6567 and SD of 0.644424.

4.3.11 Assessment of project success

Table 4.12 Assessment of project success

No	Item	N=60	Frequency	Percent	Mean	Standard deviation
1	Effective of project governance	strongly disagree	0	0	3.65	0.88
		disagree	7	11.7		
		neutral	16	26.7		
		agree	28	46.7		
		strongly agree	9	15		
2	The Project Management Methodology fit the needs and characteristics of your projects	strongly disagree	2	3.3	3.7	0.979
		disagree	6	10		
		neutral	10	16.7		
		agree	32	53.3		
		strongly agree	10	16.7		
3	Effective team work	strongly disagree	2	3.3	3.53	1.065
		disagree	10	16.7		
		neutral	12	20		
		agree	26	43.3		
		strongly agree	10	16.7		
4	Projects aligned with their objective and stakeholder expectation	strongly disagree	2	3.3	3.52	1
		disagree	8	13.3		
		neutral	15	25		
		agree	27	45		
		strongly agree	8	13.3		

5	Effective communication methodology	strongly disagree	0	0	3	0.84
		disagree	19	31.7		
		neutral	24	40		
		agree	15	25		
		strongly agree	2	3.3		
6	Finished on time	strongly disagree	1	1.7	2.88	0.869
		disagree	24	40		
		neutral	23	38.3		
		agree	6	10		
		strongly agree	6	10		
7	Finished within budget	strongly disagree	1	1.7	3.28	0.802
		disagree	11	18.3		
		neutral	20	33.3		
		agree	26	43.3		
		strongly agree	2	3.3		
8	Attain quality standard	strongly disagree	0	0	3.4	0.982
		disagree	15	25		
		neutral	13	21.7		
		agree	25	41.7		
		strongly agree	7	11.7		
	Overall				3.37	0.57463

Source: own data survey

Table 4.12 shows the responses for Core Consulting Engineers Plc's project success. The table provides the responses to eight questions. The first question is about the effectiveness of project governance. None of the respondents strongly disagreed, 7 (11.7%) disagreed, 16 (26.7%) selected neutral, 28 (46.7%) agreed, and 9 (15%) strongly agreed. The majority of respondents (37, or 66.7%) believe that the effectiveness of project governance is high. The second question is about whether the project management methodology fits the needs and characteristics of the projects. 2 (3.3%) of the respondents strongly disagreed, 6 (10%) disagreed, 10 (16.7%) selected neutral, 32 (53.3%) agreed, and 10 (16.7%) strongly agreed. The majority of respondents (42, or 70%) believe that the project management methodology fits the needs and characteristics of the projects. The

third question is about the effectiveness of teamwork. 2 (3.3%) of the respondents strongly disagreed, 10 (16.7%) disagreed, 12 (20%) selected neutral, 26 (43.3%) agreed, and 11 (18.3%) strongly agreed. The majority of respondents (36, or 60%) agree that there is effective teamwork. The fourth question is about whether the projects are aligned with their objectives and stakeholder expectations. 2 (3.3%) of the respondents strongly disagreed, 8 (13.3%) disagreed, 15 (25%) selected neutral, 27 (45%) agreed, and 8 (13.3%) strongly agreed. The majority of respondents (25, or 58.3%) agree that the projects are aligned with their objectives and stakeholder expectations.

In response to the fifth question about Effectiveness of communication methodology, none of the respondents strongly disagreed, 19 (31.7%) disagreed, 24 (40%) selected neutral, 15 (25%) agreed, and 2 (3.3%) strongly agreed. The majority of respondents (19, or 31.7%) disagree that there is Effectiveness communication methodology. In response to the sixth question about project finished on time, 1 (1.7%) of the respondents strongly disagreed, 24(40%) disagreed, 23 (38.3%) selected neutral, 6 (10%) agreed, and 6 (10%) strongly agreed. The majority of respondents (25, or 41.7%) disagree that project is finished on time. In response to the seventh question about project progress was reviewed frequently with the customer, 1(1.7%) of the respondents strongly disagreed, 11 (18.3%) disagreed, 20 (33.3%) selected neutral, 26 (43.3%) agreed, and 2 (3.3%) strongly agreed. The majority of respondents (28, or 46.6%) agree that project progress was reviewed frequently with the customer in the organization. In response to the last question about Attaining quality standard, none of the respondents strongly disagreed, 15 (25%) disagreed, 13 (21.7%) selected neutral, 25 (41.7%) agreed, and 7 (11.7%) strongly agreed. The majority of respondents (33, or 63.4%) agree that the organization attain quality standard.

Additionally, table (4.12) showed that the mean and standard deviation of the entire project success assessment were 3.37 and 0.5746, respectively. The highest score for each item is " The Project Management Methodology fit the needs and characteristics of your projects" with a mean of 3.7 and a standard deviation of 0.979. This is followed by " effectiveness of project governance " with a mean of 3.65 and an SD of 0.88, and the next is "effective team work," with a mean of 3.53 and a SD of 1.065. The next is " Projects aligned with their objective and stakeholder expectation," with a mean of 3.52 and a SD of 1. The next is " Attaining quality standard " with a mean of 3.4 and a SD of 0.982. then "Finished within budget" with a mean of 3.28 and an SD of 0.802. The

next is " Effectiveness of communication methodology," with a mean of 3 and a SD of 0.84. Finally, "finished on time," with the mean = 2.88 and SD = 0.802. So according to the findings, organization project success is achieved, as evidenced by the mean of 3.366 and SD of 0.5746.

Additionally, the analysis of the open-ended question provided some supportive insights into the company's strengths and weaknesses in project management. The participants praised the company for its ability to procure for the projects and to maintain high quality standards for the project outcomes. However, they also pointed out that the company has difficulties in managing the project schedule in an effective and efficient manner. And they also pointed out that some of the knowledge area of project management is impracticable. Moreover, they expressed their dissatisfaction with a lack of adequate project management training opportunities available for the employees in the company.

The open-ended question also revealed some information about the challenges involved in applying the 10 knowledge areas of project management in the context of road construction. The respondents indicated that doing road building projects required a high level of competence and knowledge of the unique difficulties and limitations faced by the sector. Among the difficulties they identified particularly those relating to project risk and cost management. Project cost management faces a substantial problem as a result of constrained government funding for road development. And also, respondents pointed out that it is challenging to adapt the PMBOK's framework for project risk management because of the variability of the natural terrain, soil conditions, weather, and unforeseen conditions in one project, which present unique risks that must be carefully assessed.

Chapter 5
Summary, Conclusion and Recommendation

5.1. Introduction

A summary of the findings and some recommendations for addressing the project management practice gaps identified during the study are presented in this chapter. It is divided into three parts. Summary of the results is presented in the first section. The conclusion is presented in the second portion, and recommendations are provided in the third section.

5.2. Summary of the finding

The research's results are summarized below.

- According to the respondents' responses, project scope management, project integration management, project quality management, project procurement management, and project stakeholder management are practiced well in the core consulting engineers plc. This is demonstrated by their mean value, which is higher than 3.2 in total.
- The second finding from the respondent response, project schedule management and project risk management are not practiced in the organization. This is also demonstrated by their mean value, which is lower than 2.8 in total.
- The remaining three knowledge area of project management; project cost management, project resource management and project communication management are in the region of neutral zone in between 2.8 to 3.2 but their value is greater than 3 points i.e. 3.05, 3.19, 3.0667 respectively. This indicates they are close for good practice but need improvement.
- The participants' responses to the assessment of project success show a mean value of 3.37, indicating that there is project success in the organization. As a result, it can be summarized that the project management practice of core consulting engineer's plc is in satisfactory condition, which has a substantial impact on the project's success.
- The analysis of the open-ended question provided supportive insights into the company's strengths and weaknesses in project management. Participants praised the company for its ability to procure and maintain high quality standards, but also noted difficulties in

managing the project schedule in an effective and efficient manner. They also expressed their dissatisfaction with a lack of adequate project management training opportunities available for employees.

- The open-ended question also revealed some information about the challenges involved in applying the 10 knowledge areas of project management. They discussed the difficulties in applying the PMBOK framework, particularly in project risk and cost management. They claimed that due to the limited government budget for road building, project cost management faced a serious challenge. They also stated that project risk management need to account for the varied natural characteristics of topography, soil, and weather, which produce distinct risks that must be carefully evaluated and responded to.

5.3. Conclusion

The overall objective of the project work is to assess project management practices in the road construction sector, specifically on core consulting engineers plc. A relevant literature review that takes project management practices into account was carried out in order to attain this objective. For this study, primary and secondary data was collected. As an outcome of the descriptive analysis results and the summary of main findings, the following conclusions were reached.

The assessment was based on the ten-knowledge areas of project management, as defined by the Project Management Institute. The study used a qualitative-methods approach and collected both primary and secondary data. A 5-point Likert scale questionnaire survey with an open-ended question at the end is used in this investigation. A total of 60 people responded to the questionnaire. The data collected from these respondents was then analyzed using SPSS software, which employed descriptive statistical metrics such as frequency, mean, and standard deviation. The analyzed data was then provided in the form of tables and textual constructions to provide a full overview of the findings.

The study result show that the organization performs well in project scope management, project integration management, project quality management, project procurement management, and project stakeholder management. However, project schedule management and project risk management demand substantial improvement. Furthermore, project cost management, project resource management, and project communication management have the potential but require

more attention to achieve good practice. The survey also discovered that the organization's project success rate was 3.37 on a five-point scale, indicating that the company had effective project management practice. As a result, it is possible to conclude that core consulting engineer's plc's project management practice is in relatively a good status.

The study has provided additional insights regarding the strengths and weaknesses of project management within the company, as well as the external factors that have influenced its performance. An important point to note is that the company's main strength lies in its ability to ability to procure for projects and maintain high quality standards. However, it has been identified that the company's main weakness is its inability to effectively and efficiently manage project schedules. Additionally, the study has recognized that limited government budgets for road construction and varying natural conditions of project sites pose significant challenges for project cost and risk management, respectively. These insights can be used to identify areas of focus and implement strategies to improve project management practice inside the organization, resulting in better project outcomes and overall success.

5.4. Recommendation

The researcher made some recommendations that were relevant and practical, based on the research objectives, research problems and the study's findings.

- The company needs to put a greater emphasis on project risk management and schedule management by providing appropriate resources and teams on the ground. Concerning project risk management, the organization need to establish a culture where general project staff and experts in project risk management measure, assess, and manage risk. Additionally, the management of the project schedule must be given top importance with proper monitoring and reporting procedure. The higher project management staff must also be in charge of any deviations from the plan. In this method, unnecessary choices that might compromise the schedule and introduce potential risk are avoided.
- Additional recommendations for the company are to upgrade its project management practices in three areas: communication, resource and cost. for Project communication management, the company should establish clear and consistent communication channels,

methods and protocols to ensure that everyone involved in the project is well-informed and aligned with the project objectives. For Project resource management, the company should allocate adequate and appropriate resources and teams on the ground to perform the project activities efficiently and effectively. And lastly for Project cost management, the company should track and report the project costs regularly and take corrective actions if there are any deviations from the planned budget. By implementing these three project management practices, the company can enhance its project performance and deliver better results to its clients.

- The company should ensure that the project management personnel and other staff receives the appropriate training. The senior management should also acknowledge and place just as much importance on the project management team's size and quality as they do on the technical team.

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Appendix

Questioner

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

Masters of Project Management

SECTION I: Survey Questionnaire

This survey was prepared to gather data for the study conducted on project management practice at Core Consulting Engineers Plc. The objective of this questioner is to gather data for a research report that will be used for the partial fulfilment of MA degree in project management at Addis Ababa university school of commerce. Your comments are valuable to the research work. As a result, I humbly request that you complete this questionnaire in order to achieve the primary objective of the study. Your response will be kept in the strictest of confidence and used just for this study. We appreciate your willingness to participate in this survey. Please contact me at the following addresses if you have any questions or comments:

Tel: 0919170620 and Email-weldemariam24@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. **Gender** 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 ☐ D. ≥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 is always assigned early in the projects					
2.	There were efficient change managements practice in project					
3.	Single and cohesive project management plan was developed					
4.	Projects will be finished with in the scheduled time					
5.	There is Proper monitoring and reporting scheme in the company					
Project Scope Management						
1.	At the start of the project the requirements of the stakeholder's need is always 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 during planning and execution of projects					
2.	Activities were sequenced with time required for each of activities that were estimated					
3.	There was schedule management plan developed for projects					
4.	The changes from the project schedule were controlled					
Project Cost Management						
1.	The Cost estimate were in-line with agreed scope					
2.	A budget for the project (cost baseline) was assigned					

3.	A cost management plan that detail how the project budget is estimated and controlled was generated					
4.	The Change in project cost 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 was 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.		**5**	**4**	**3**	**2**	**1**
1.	Effective of project governance					
2.	The Project Management Methodology fit the needs and characteristics of your projects					
3.	Effective team work					
4.	Project aligned with their objective and stakeholder expectation					
5.	Effective communication methodology					
6.	Finished on time					
7.	Finished within budget					
8.	Attain quality standard					

Part IV: **Questionnaires related to project management practices in core consulting engineers;**

Is there project management training access in the organization?

_____

What is the main challenge in adapting the ten knowledge are of project management?

_____

What is the main strength of your company in project management practice?

_____

What is the main weakness of your company in project management practice?

_____