



ADDIS COLLEGE

FACILITY OF TECHNOLOGY

DEPARTMENT OF PROJECT MANAGEMENT

**ASSESSMENT OF QUALITY MANAGEMENT PRACTICE IN THE CASE
OF ADDIS ABABA RIVER SIDE GREENERY DEVELOPMENT
PROJECT**

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DECLARATION

I hereby declare that the thesis /Project work/entitled “**Assessment of Project Quality management Practices: the Case of Addis Ababa River side greenery development Project**” submitted to the School of Addis College for the award of the Degree of Masters of Project management is based on my original research work carried out by me myself under the supervision and guidance of **Mekonnen Mengistie (PhD)**. I declare that this study is my original work and has not been submitted earlier in full or in a part there, for the award of other similar degree, Diploma, Fellowship, Associateship or any other similar titles to this or any other University or Institution.

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This is to certify that the thesis prepared by Dawed Kedir “Assessment of Project Quality management Practices: the Case of Addis Ababa River side greenery development Project” and submitted in partial fulfillment of the requirements for the Degree of Masters of Project Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Acronyms

BRE.....	British Research Environment
CCCC.....	China Communication Construction Company
GTP.....	Growth and Transformation Plan
PMBOK.....	Project Management Body of Knowledge
PMI.....	Project Management Institute
QMPs.....	Quality management Practices
SPSS.....	Statistical Package for Social Science
TQM.....	Total Quality Management
TRB.....	Transportation Research Board

ABSTRACT

The main purpose of this research was to assess the implementation of quality management practices in the Addis Ababa Riverside Greening Project. Quality management is essential for productivity improvement in construction projects, encompassing functions such as quality planning, assurance, control, and improvement. Data collection utilized questionnaires and site visits to identify annual construction work requirements. Simple descriptive analyses, including tables, were employed to analyze the results from the questionnaires. A total of 161 sample respondents were selected using whole population (census) and purposive sampling techniques. Questionnaire and interviews were instruments of data collections for the study. The collected quantitative data were analyzed by using descriptive statistics mainly, were used mean and standard deviation to analyze the data. Additionally, secondary sources of data were obtained from relevant literature covering the case study's related theses. This research purpose was to examine the project's adherence to quality standards, the effectiveness of quality control measures, and the overall impact on project outcomes. The major implication of this study was into the strengths and weaknesses of the project's quality management system practice, offering Strengthen Top Management Support, Ensure strong and consistent support from top management to prioritize quality initiatives and allocate necessary resources and Enhance Communication to improve communication channels and foster a culture of open and honest communication among all project stakeholders for improvement.

Keywords: *Quality management system, Quality management practice, Communication,*

CHAPTER ONE

1.1 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Quality is one of the main factors that create the success of construction projects. The quality of construction projects as well as project success can be considered as meeting the expectations of project stakeholders. Quality, cost and time have been recognized as key factors relevant to customers. However, for the majority of projects, cost and schedule parameters are the main factors of concern in a construction project. Quality in the construction industry is closely linked to customer satisfaction, and the implementation of quality management is a key tool for consistent and reliable construction management (Mane, 2015).

The Ethiopian economy experienced strong and broad-based growth, averaging 9.9% per year between 2007/08 and 2017/18, with the construction and services sectors accounting for most of the growth. The Government is implementing the second phase of the Growth and Transformation Plan (GTP II) which will run until 2019/20. GTP II aims to further expand physical infrastructure through public investment and transform the country into a manufacturing hub (World Bank, 2019). The current concern is production quality. Each construction project has different specific requirements and operating methods, leading to different challenges. During the implementation phase, achieving the required quality is one of the main concerns of managers and beneficiaries. To achieve this, the quality management measures applied in projects varies from project to project.

The practice of QMP (Quality Management Practices) is important to minimize project costs caused by delays and meeting required specifications. In order to address the problem of quality management practices of case study company CCCC, the study attempts to answer questions to achieve the objectives.

These questions are: What is quality, what is a quality management system and what is a quality control management.

There is no universally accepted definition of quality. Over the years, various scholars have developed definitions of quality (Garvin, 1984; Reeves and Bednar, 1994; Seawright and Young, 1996; Russell and Miles, 1998; Beaumont and Sohal, 1999; Sebastianelli and Tamimi, 2002; Ojasalo, 2006). According to Juran, quality means that the product meets the customer's needs, which leads to customer satisfaction, and all the activities that a company undertakes to ensure that the product meets the customer's needs (Juran, 1974; 1988).

In the case of Philip Crosby, an influential author of management and quality theory, he took a slightly different perspective on quality. He defined "quality" not in terms of conformance, but in terms of requirements. Requirements set for the product and requirements of the consumer (sales perspective). Crosby (1979). And of course, in our context, it is about achieving an acceptable level of performance in construction activities (construction perspective). Quality control, as the

name suggests, is the management of the quality of services and products. When it comes to project management, ensuring the desired quality is the overall outcome. Project management requires thorough quality control.

However, quality does not necessarily mean perfect, high-quality products or services, but rather maintaining consistent quality across projects and different products and services. The quality that should be maintained in a project is determined by the project stakeholders, owners, and customers. Quality management includes quality assurance, quality control, and quality improvement. Quality assurance is performed by continuously and iteratively monitoring and evaluating various aspects of a project. Its purpose is to ensure that the work is of at least the lowest acceptable level of quality. This includes establishing project-related policies, procedures, standards, training, guidelines, and systematic activities to be implemented in the quality system to meet quality requirements (Basu, 2004; Freeman-Bell & Balkwill, 1996; Aziz & Abdel-Hakam, 2016; Panuwatwanich and Nguyen, 2017).

In the construction industry, project managers and project consultants are responsible for ensuring that work is completed within agreed cost and time targets, as well as ensuring the necessary quality and oversight. Quality standards are usually defined based on an organization's values and standards (Chandana, 2017). The project on which my research is based is the Addis Ababa Riverside Project, Prime Minister of Ethiopia. Abiy Ahmed was initiated. This project is being carried out by the Chinese company CCCC and it is important to meet the required quality. The project is located in the heart of Ethiopia's capital Addis Ababa and covers an area of 285,767 square meters.

The completion of this project will demonstrate that Ethiopia's national image is open to the outside world and embodies the core values of "national unity and harmonious coexistence", making it an important center of Ethiopia's national politics. It will emphasize its location and become a popular vacation spot for tourists. Therefore, this study investigates foreign companies QMPs operating in Ethiopia.

This project sent a Chinese team to conduct a feasibility study in February 2019. The company responsible for the construction recruited 1,500 Ethiopian workers to build the parking lot, the 6 relief wall, the grandstand, the central gathering square and the artificial lake; two belts: floral belt and active riverine belt; completed before the end of May 2020. Most construction projects are carried out with predetermined cost, completion time and quality. The general assessment of the success of construction projects is that they are delivered on time, on budget, to technical standards and to customer satisfaction. In terms of cost, implementation time and project quality, Ethiopia's construction industry is not at the required level compared to the rest of the world.

Among the various factors that contribute to poor practices in the domestic construction industry, the use of substandard formwork systems (Amare, 2015) is therefore important to consider. Quality management practices of the 'designated company in the designated project'.

1.2 STATEMENT OF PROBLEM

One problem facing the construction industry is poor quality standards. This is a very common and serious problem because quality expectations are not respected in construction projects. Failure to achieve required quality also has a significant impact on project costs.

The cost of (nonconforming) quality in the US construction industry is said to contribute up to 12% of total project costs. And research into the quality performance of construction projects through case studies shows that quality defects lead to rework, resulting in additional costs of approximately 2% to 12% of costs. Project, while asserting that quality remediation issues contribute approximately 3.4% to 6.2% of construction costs. Project cost (Oluyemi -Ayibiowu; 2019). A study conducted by Wubishet Jekale aims to improve understanding of the poor performance of public construction projects in Ethiopia by taking two case studies from public construction projects. The study clearly shows that the performance of public construction projects in both case studies showed low completion rates. As a result, completion times were poorly affected for both case studies. But while Case Study I showed poor performance in cost overruns, Case Study II showed that poor performance was closely related to quality issues. Then, immediate goals are also affected during implementation.

Another study conducted by Diresin in 2016 found that most apartment buildings in Addis Ababa built by the government had numerous complaints about defects in the construction elements of the homes. One of the causes of this situation is poor workmanship during construction. This will affect the lives of the occupants and also create a bad image for the parties involved in the construction of apartment buildings (Dires,2016) Fekadu in 2007 titled Investigation of superstructure collapse incident architecture of some buildings in Addis Ababa, who focused on the existence of construction damages at construction sites of various construction projects for superstructures only; and Bedru in 2015 title Construction Defects in Federal Government Office Construction Projects in Addis Ababa for his master's work. 7

Similarly, Abraham (2004), cited by Miressa (2017), shows that he improved the understanding of the poor performance of public construction projects in Ethiopia by conducting two case studies. Research shows that the implementation of public construction projects has low completion rates. Therefore, lead times, cost overruns, and quality issues contributed to the poor performance of both case studies (Abraham, 2004).

It is well known that many major projects implemented in Ethiopia are carried out by foreign companies. Like the construction of Ethiopian commercial bank, the construction of nib bank, the construction of greening projects are under construction and some of them have been completed.

We can undertake the construction of the Renaissance Dam in Ethiopia under the responsibility of METEC. Various media widely reported that the project was delayed and quality suffered due to various factors. All these studies show that the construction industry is having difficulty meeting quality requirements. This raises the question of why projects in Ethiopia do not meet the criteria.

The reasons why these projects did not meet quality expectations can be attributed to ineffective planning of project control methods, lack of professional capacity involved in the process, lack of continuous improvement in process implementation and financial constraints contribute greatly. As today's projects become increasingly technically complex and logistically challenging, construction is vulnerable to quality assurance failures unless quality management measures are in place newly developed and deployed.

Therefore, this study evaluated the quality management challenges and practices of the Addis Ababa Green Project; while the application of best practices in project quality management is important so that the project can meet customer expectations as well as industry developments and the use of best practices in the Quality management projects also improve overall project management performance.

Furthermore, the study also evaluates the level of performance of selected independent variables in project quality management and perceived project quality.

1.3 RESEARCH OBJECTIVES

1.3.1 General objectives

The general objective of the research is to assess the quality management practices and quality management challenges in Addis Ababa greening project

1.3.2 Specific Objectives

The specific objectives of this study are:

- To assess the major quality management practices those are implemented in the Addis Ababa river side greening project.
- Identify the major challenges of quality management practices in Addis Ababa river side greening project.
- To further comment for future studies on how to improve quality management

1.4 RESEARCH QUESTIONS

The study will seeks to answer the following questions.

1. What are the practices of the project quality management practice in Addis Ababa river side greening development project in CCCC?
2. What are the challenges of the project quality management in Addis Ababa river side greening development project?
3. What would be the methods or approaches to improve quality management?

1.5 SIGNIFICANCE OF THE STUDY

This study is important for the city government by alerting about the current status of the project in terms of quality. It will also benefit government agencies and policy makers in contributing to the development of policies that improve the overall state of construction in terms of quality.

This recommendation can serve as a springboard for other researchers to fill knowledge gaps or further explore new methods and ideas within a quality assurance framework. Research results, whether indicating that the current practices of the company in question are excellent or inadequate, will provide local entrepreneurs with an opportunity to learn lessons for improvement. Further improve their practices and be competitive.

In summary, research should:

- Contribute to improving project quality
- Contribute to the advancement of better QMP
- Fairly assess the limitations of quality management

1.6 SCOPE OF THE STUDY

This study is limited to quality management practices and challenges related to these practices of the Addis Ababa greening project limited to phase1 implemented by CCCC.

Overall, the study is limited to examining the nature of process quality management in the project management process by identifying the root causes of achieving project quality during project construction. Projects quality in the past 5 years (2020-2024) and factors affecting QMP implementation.

In this regard, the study will address project quality defects, causes of quality problems, implemented solutions, and overall project quality management measures to achieve gain consumer satisfaction. This study is also limited to project contractors, while stakeholders in project implementation and management are also owners, consultants and others due to limited financial capacity, Lack of time and lack of willingness. The geographical boundary of the study area is in Addis Ababa, around Taitu Road, near Sheraton Addis Hotel.

The thematic scope of the study was limited to the collection of data related to quality assurance practices and factors that may influence them. Researching this project will benefit the researcher as they play a major role in it. And therefore, the collection of reliable data and detailed knowledge of the project is beyond doubt. Quality in this study is considered through the eyes of the entrepreneur or practitioner and not according to customer satisfaction.

1.7 LIMITATION OF THE STUDY

There is a wealth of research literature on quality management practices in construction projects. Most of these studies emphasize quality management in projects and recommend best practices. However, most of the research on quality management in the construction sector is conducted abroad. The results may not be applicable to the Ethiopian context due to political, economic, social, and technological factors that are generally unique to each country. According to Tim McClintock, there are various useful tools and techniques for planning, quality assurance, and quality control, but the author did not explain them in a practical way.

There are knowledge gaps about quality assurance and quality control in the Ethiopian construction sector and how these practices relate to project success. And the research conducted

in the context of this country does not deal deeply with quality assurance management. For example, many studies based on Ethiopian construction quality have focused on identifying the problems they face (Beshah, 2011) or on the overall performance of projects (Tagesse, 2017). In a study conducted by Melat Girma, the researcher identified quality as a factor in measuring success, but did not clarify how we can achieve quality through implementing quality management. This is the motivation behind the objective of this study. Therefore, the objective of this study is to evaluate the quality management activities carried out in the Addis Ababa riverside project by the foreign company CCCC.

Limited Focus on Specific Aspects of Quality Management. Some studies may focus narrowly on certain aspects of quality management, such as quality control or assurance, while neglecting others. This can lead to an incomplete understanding of the overall quality management practices in the project and also with limited time frames may not capture the long-term impact of quality management practices on the project's outcomes. This can be particularly relevant for large-scale projects like the Addis Ababa Riverside Project, where the effects of quality management may take years to fully manifest.

Data Availability and Accessibility is Access to comprehensive and reliable data on quality management practices can be challenging, especially for large-scale projects like the Addis Ababa Riverside Project. This can limit the depth and breadth of the research findings. The choice of data collection methods, such as surveys, interviews, or document reviews, can introduce biases or limitations. For example, surveys may not capture the full range of experiences and perspectives of stakeholders involved in the project.

1.8 ORGANIZATION OF THE THESIS

This research consists of five main chapters as follows:

1. Chapter one: Introduction: this chapter shows background of the study, statement of the problem, objectives of research, research questions, justification, significance and scope and limitations of the research.
2. Chapter two: Literature review: this chapter shows a detail review from concepts and definitions to identify the main factors affecting QAP. It will constitute of theoretical frame Work and conceptual frame work that will help us achieve by guiding the data collection methods.
3. Chapter three: Research methodology: this chapter shows the methodology used in this research in order to achieve the required objectives and to answer the research questions.
4. Chapter four: Result analysis and discussions: this chapter shows result, description and discussion of research results.
5. Chapter five: Conclusions and recommendations.

CHAPTER TWO

2.1 RELATED LITERATURE REVIEW

2.1 Introduction

The Addis Ababa River Side Green Project is a significant urban development initiative aimed at transforming the city's riverbanks into vibrant green spaces. Effective quality management practices are crucial for the success of this project, ensuring that the final outcome meets the desired standards of quality, sustainability, and functionality. This research delves into the quality management practices employed in the Addis Ababa River Side Green Project, focusing on four key aspects: quality planning, quality control, quality assurance, and quality improvement. By examining these practices, the research aims to identify areas of strength and weakness in the project's quality management system and provide recommendations for improvement.

These developments are also intended to offer the inhabitants an opportunity to take ownership of the riverbanks, which will become a green corridor ideal for walks and leisure activities of a type that is too rarely seen in African cities. This is the inclusive dimension of the project, which will improve the environment and quality of life for all residents in the city Centre, along the main river, and in the precarious neighborhoods located along the tributaries. The parks will cool the surrounding neighborhoods and help reduce air pollution.

The project also includes a major sanitation component. Public toilets will be constructed in the squatter settlements that have sprung up on the slopes of the Entoto hills which is the source of several of the watercourses, as well as a network of sewage pipes that drain wastewater to treatment plants. The city authorities are hoping for new recreational areas and clean rivers that will once again flow through the city in a virtuous circle.

While the primary goal is to avoid the enormous human and material losses caused by floods, the project's financial projections are underpinned by eco-friendly considerations: attractive neighborhoods with potential to trigger a boost in economic activity and to fuel demand in the real estate sector, and even in tourism. This also means new tax revenue for the municipal authorities, and therefore new investment opportunities.

2.1.2 Project Quality Management

Quality management, as its name suggests, is concerned with managing the quality of services and products. When it comes to project management, ensuring the desired quality is key to overall success. Project implementation must ensure quality management. Quality must be integrated into the design process with attention to the early stages of the building lifecycle, thereby eliminating the need for mass inspections, leading to reduced operating costs when transitioning from this mode to another mode from reactive to proactive quality management (Kaiser & Raisinghani, 2011). According to Crawford, the general objectives of quality management are to satisfy customers, comply with requirements, ensure fitness for intended

purpose and ensure product use. The project model views quality this section includes review papers from various researchers and authors who have been evaluated in the field of quality management. It discusses the theoretical and practical findings of various concepts by researchers related to projects, project quality management processes, quality assurance, quality assurance tools as well as techniques and factors affecting QMP. It refers to the review of relevant documents collected from various secondary sources such as published books, articles, and related websites. In this regard, efforts have been made to include as much relevant literature as possible by reviewing available literature presenting perspectives, in order to achieve the research objectives. It is important to understand the final products or deliverables and the processes used to obtain them so that QMP implementation can ensure the quality of construction projects. To understand the QMP implementation process in the construction sector, it is important to take a look at the current theory on quality practices included in this study.

Current theory focuses on general concepts of quality practices in construction project structures and project management.

This section will be made up of two frames.

1. **Theoretical Literature Review:** - this section will identify what quality means from the various literatures and more specifically in the construction context. And therefore, quality assurance and quality control are part of project quality management. The definitions and aspects of quality management will be briefly discussed in this section. These aspects are quality planning, quality assurance, quality control and quality improvement. In addition, quality assurance and control in construction will be researched specifically within the available documents.

2. **Review of empirical literature:** - Empirical literature provides empirical evidence on quality management in construction projects. Furthermore, at the end of this section, the conceptual framework of this study is presented.

2.2 Theoretical Literature Review

2.2.1 What is quality?

The term quality means different things to different people. Some people believe that the very characteristics of a product or service will influence its ability to satisfy needs. While others see it as the degree to which a product exceeds customer requirements and expectations. On the other hand, others say it is about respecting regulatory standards.(Quality Digest Magazine, 2013) The International Organization for Standardization (ISO DIS 9000.2000) officially defines quality as the degree to which a set of inherent characteristics fulfills requirements. In the field of quality assurance, quality is not a statement of excellence in a comparative sense.is simply a shortcut to the desired quality that should be as clearly defined as possible.

On the other hand, the manufacturer strives to achieve the desired quality at an optimal cost while the customer needs confidence in the manufacturer's ability to provide and maintain solid quality.

However, quality in construction is more difficult to explain. First, the product is not a mechanical unit but a work of art with its own characteristics. An example is a building made up

of different components that make up the entire body. Each of these components has a unique characteristic and quality is judged based on the processes and materials used to achieve it. In other respects, construction costs and delivery times will depend on the quality of the building design, the detailed specifications required and the final result.

The quality of completed works will be monitored by inspection and testing measures during construction. For example, the quality of concrete used at the construction site must first be inspected and tested before being put into use. And then, the concrete that has passed the final sample test will be tested again to check whether it has reached the required strength or not. Due to poor manufacturing and not following the prescribed steps, it can pass the quality test but still not achieve the desired end result.

The importance of implementing quality assurance and control cannot be overemphasized, as errors that occur during construction cannot be corrected and will cost a lot of money. It is the management's responsibility to carry out quality assurance and control and monitor them diligently.

Management as a set of activities or tasks required to ensure that the project meets all the needs it has implemented based on the documents recorded in the project state. Work ergonomics and emphasis on quality management from a product and process perspective. Everyone needs to make quality an effective and efficient aspect of project success (Crawford, 2002).

2.2.3 What is quality planning?

Moreover PMBOK Direct clarifies that “Project Quality Administration incorporates the forms and exercises of the performing organization that decide quality approaches, goals and obligations so that the venture will fulfill the needs for which it was embraced. It executes the quality administration framework through approach and methods with ceaseless handle change exercises conducted all through, as appropriate” (PMBOK, 2008:189). PMBOK clarifies Extend quality administration comprises of quality arranging, quality confirmation, quality control. “PMBOK” characterizes quality arranging as they prepare of “identifying the significant quality guidelines for extend and deciding how to meet them”: In other words, it implies arranging how to meet handle and item (deliverable) quality necessities: » Quality is the degree to which a set of inborn characteristics meets prerequisites.

In quality planning work, a number of principles must be respected:

- ✓ Customer satisfaction comes first: Quality is defined by the requirements of the customer
- ✓ Prevention over inspection: It's better to avoid mistakes than to inspect the result and repair the defects.
- ✓ Management responsibility: Costs of quality must be approved by the management
- ✓ Continuous improvement: Becoming better is an iteratively structured process.

2.2.4 What is Quality control?

PMBOK considers quality control as the specialized perspective of quality administration. Venture group individuals with particular specialized mastery on diverse angles of the venture play a dynamic part in quality control. They put in put specialized forms and methods to guarantee that each stage of extend conveys quality comes about from plan and advancement to

usage and support. They comes about of each organize must be steady with the by and large quality benchmarks and quality plans, in this manner guaranteeing the accomplishment of quality (PMI, 2008). Agreeing to Zenebe (2017), quality control incorporates checking the particular comes about of a venture to decide whether they comply with important quality benchmarks and recognize ways to dispose of them causes of inadmissible comes about. It must be done all through the extent. Extend comes about incorporate both item comes about such as deliverables and administration comes about such as taken a toll execution and plan. Quality control is more often than not performed by a quality control division or essentially titled organizational unit but this is not required. Extend administration groups require working information of measurable quality control, particularly examining and likelihood, to offer assistance them assess quality control comes about.

2.2.5 What is quality assurance?

Quality confirmation is guaranteed by persistent and rehashed checking and assessment of different viewpoints. Its reason is to guarantee that work is completed at slightest to a least worthy level of quality. In which we (ISO 9001: 2000) have moreover characterized quality affirmation as a portion of quality administration to guarantee that quality necessities are met. Despite the riches of location involvement in later a long time, one in ten development contracts comes about in client disappointment and complaints against the temporary worker. Analysts from the British Inquire about Founded in the Joined together Kingdom show that 40% of building absconds happen amid the development stage (BRE, 1982).

In most cases these defects happen because of Poor workmanship, Misinterpretation of drawing and specification, not clearly specified requirement, Lack of supervision, Poor communication between the existing stakeholders and Lack of proper planning.

2.2.6 Quality management in construction

Quality management systems can provide solutions to some long-standing problems in construction companies. This can also create good opportunities for restructuring and modernization, as well as changes in accepted traditional methods without the need for in-depth analysis. QMP in the housing construction sector mainly deals with quality planning, quality assurance and quality control. To implement quality management in housing construction projects, the concepts of quality planning (determining quality standards), quality assurance (assessing overall project performance) and Quality control (monitoring of specific project results) in the quality management process has been defined by (PMI, 2000).

According to (Rumane, 2011), construction project quality management is defined as meeting the owner's needs within a defined scope of work within a defined budget and schedule to meet requirements of Owner's. Every project has unique elements, meaning no two projects are the same. Owners always want their projects to be unique and better. To a greater extent, each project must be designed and built to meet a specific need.

Construction projects are more individualized than a routine and repetitive activity (Rumane, 2011). This shows that it is necessary to address the issue of comprehensive and appropriate

quality management practices that include all components and people involved in the construction activity for successful implementation of the actual plan to ensure achieve required standards of construction quality. A well-implemented QMP will have an impact on all areas of the company. According to (Fixsen et al., 2001), implementation is defined as a set of specific activities designed to bring into practice an activity or program with known aspects.

According to this definition, implementation processes are useful and are described in enough detail so that independent observers can detect the presence and strength of “specific activity groups” involved in deployment.

Additionally, the activity or program being implemented is described in sufficient detail so that independent observers can detect its presence and strength. The principles of a quality management system related to quality include the construction company establishing policies and objectives for managing resources, assigning responsibilities, roles and authorities to personnel and Developing the company's human resource structure. The empirical literature provides practical support for quality management practices in construction projects.

Today, to solve quality problems and meet customer needs, construction companies have applied QMP in their operations. Therefore, this section focuses on other studies conducted in the same field. One of the first empirical studies conducted in the field of quality management by (Saraph et al., 1989) used data obtained from 162 managers from 20 manufacturing and service industries. collected in the US region to identify the CSFs of quality management.

They identified eight factors: senior management leadership, the role of the quality department, training, product design, supplier quality management, process management, quality data publishing, and employee relations. For the purpose of empirical examination, this study selected the study conducted by (Agbenyega, 2014), which focused on the quality management practices of construction companies in Ghana. he study focuses on overcoming potential obstacles, which are the main actions to be taken, namely: management commitment, communication between managers and employees, employee participation, Detailed and streamlined work program, regular inspections, quality audit reports, lack of training and education of team members, as well as review and analysis.

Other research conducted by Birhanu identified that lack of supervision, communication, effective participation management, appropriate equipment and materials available for 16 uses, ineffective resource management and problems with entrepreneurs are some of the challenges to achieving project quality (Birhanu, 2014) .Research conducted on quality management in construction projects in Malaysia were also considered for empirical examination of this study. This Malaysian researcher briefly explores quality management practices, management involvement in quality management, and quality management implementation issues in construction projects in the context of the construction industry Malaysian construction.

The results of the study indicate that the current status of quality management in construction projects in Malaysia needs to be enhanced and issues related to the implementation of quality management need to be addressed. The problems identified by the researchers are more or less the same even if there are differences due to the actual context of the project. Therefore, these variables are also considered in my research in the context of housing construction projects.

2.2.7 Quality assurance in construction

Quality assurance in construction projects is part of the quality management system. QA involves establishing project-related policies, procedures, standards, training, guidelines, and systematic activities implemented within the quality system to meet quality requirements. quality (Basu, 2004; Freeman-Bell & Balkwill, 1996; Aziz & Abdel-Hakam, 2016; Panuwatwanich & Nguyen, 2017). There are specific procedures, policies, standards, training, guidelines, and systems designed to maximize employee performance by supporting the company's strategic goals in correlation with project success by directing attention, promoting and maintaining an effective quality management system - Arditi and Gunaydin, 1997.; Nyakala, 2017).

These trainings, tutorials and systems are supported by ongoing laboratory and on-site testing. In practice, field engineers conduct testing of construction materials and inspect the construction process. More specifically, materials testing refers to the pre-qualification of materials (e.g., certified product listings, commercial-grade products) as well as sampling and testing at source, factory, or on-site .

Various researchers believe that unless construction contractors are actively involved in improving productivity through an organized quality management system, the efforts of individuals within the company will not be noted (Arditi and Gunaydin, 1997; Basu, 2004; Bierman).

In Ethiopia, project managers and project consultants are responsible for the overall success of the works involved in delivering infrastructure projects within the approved time and cost as well as quality and necessary supervision. For any built environment project to improve competitiveness in the construction industry, it must be able to identify the cost of poor quality and its impact on productivity and profitability (Ahmed, 2015).

Therefore, entrepreneurs cannot view quality as a costly process, an expensive or time-consuming product but as quality assurance that can improve their competitiveness in the market (Mofokeng & Thwala, 2012: 713; Kruger, Ramphal & Maritz, 2014).

2.2.8 Construction Quality Control

Construction project quality control is the process of verifying that a project is constructed as planned, meets allowable tolerances according to industry standards and engineering practices, and that the project has completed meets the quality standards of the inspected project. by the participating actors.

A good quality control system should take into account the following factors: choosing what to control, establishing standards as a basis for decisions regarding possible corrective actions, establishing measurement methods used, comparing actual results with quality standards, actions to bring about undesirable results 22 standard procedures and documents based on collected information, monitoring and standardization of measuring devices, including detailed documentation for all processes (Chang, 1999).

There are different quality planning tools and techniques

✓ Cost benefit analysis: analysis the cost benefit analysis is similar to cost benefit ratio. The cost and benefits are measured to analyses the trade-offs of providing quality.

✓ Cost of quality: cost of quality (COQ) includes all the costs that conform to the required quality of the project, including the cost to ensure conformance to requirements as well as the cost of non-conformance, and finding the right balance. Modern quality management philosophy emphasizes preventing mistakes rather than detecting them later because the cost of non-conformance is very high.

The following are associated with quality:

- Prevention costs are associated with keeping defective products away from the customer. Examples include quality training, quality planning, reliability engineering, or data analysis.
- Appraisal costs are associated with checking the product to make sure it is conforming, such as inspection, testing, calibration, studies, or surveys.
- Failure costs can be categorized in a couple of ways:
- Internal: non-conformance that is found while the product is still within the performing organization is called internal failure costs, and includes rework or scrap.
- External: non-conformance that is found when the product has been given to the customer is called external failure costs, and includes repair or returns.
- The cost of non-conformance can be divided in to direct and indirect
 - Direct: direct failure costs include scrap, warranty cost, rework, engineering changes, liability insurance, or inventory costs.
 - Indirect: indirect costs include fewer sales, lost customers, increased costs to get customers back, decreased team moral, or decreased project efficiency.

Additional planning tools

Brainstorming is a technique for gathering information, where multiple unfiltered inputs and ideas are solicited and captured for later analysis and decision making.

Force field analysis (FFA) is a technique for analyzing by grouping characteristics or factors that are for (pros) and against (cons) the idea.

Nominal group technique (NGT) is an enhancement of brainstorming that adds mechanism for ranking ideas. It is based on the assumption that a nominal group (one that has agreed to work as a team) will produce better results than a group engaging in traditional brainstorming. NGT collects anonymous input from group members and encourages discussion of all input. Then each member prioritizes the input items. The items are further prioritized based on their cumulative score.

2.3 Empirical Review of Literature

From the perspective of a construction company, quality management in construction projects means maintaining the quality of construction work at the required level to achieve customer satisfaction, which will bring long-term competitiveness and commercial survival of the

enterprise. Furthermore, the application of quality in the construction sector has been encouraged in some projects. The application of ISO standards has received much attention from researchers. ISO certification is currently a trend in most fields, including construction. According to Mallawaarachchi's research, to implement quality management in project management, the concepts of quality planning (determining quality standards), quality assurance (assessing the overall effectiveness of the project) and quality control (monitoring specific project results) in the quality management process is very important. Of these, quality assurance (QA) and quality control (QC) are used mainly in construction. Quality control process in construction projects are based on bidding documents, technical specifications, construction drawings, etc. Therefore, the quality and standards of pre-tender works must be properly maintained. Therefore, it is important to maintain quality control of construction projects from the beginning of the design phase until completion of construction, including the maintenance phase. Quality assurance (QA) is a program that includes necessary activities to ensure the quality of work meets project requirements (Mallawaarachchi, 2015). QA involves establishing the project-related policies, procedures, standards, training, guidelines, and systems necessary to produce quality. Quality assurance provides protection against quality problems through early warnings of impending problems. Such early warnings play an important role in preventing internal and external problems. On the other hand, quality control (QC) is the specific implementation of a QA program and related activities. Effective QC reduces the possibility of variation and errors (Mallawaarachchi, 2015). As cited by Bezawit (Beshah, 2011), Ethiopia is the 68th member of the International Organization for Standardization (ISO). The need for quality control in Ethiopia has been recognized since 1972, with the establishment of the Ethiopian Standards Institute. At the national level, the Ethiopian government considered quality as an infrastructure for development starting in the 1940s when agricultural exports began to expand (Bezawit, 2020). QMP certification is a very expensive and time-consuming process for Ethiopian industries because there is no certification agency capable of certifying local companies.

In February 2009, the Ethiopian Standards and Quality Authority (now called the Ethiopian Conformity Assessment Enterprise) received certification of the system and localization of the processes. Now, the Ethiopian Conformity Assessment Enterprise issues internationally recognized certificates not only to Ethiopian construction companies but also to any other company. The Ethiopian Quality Standards Authority also provides training and technical support on QMP (Beshah, 2011). Through analyzes of the Ethiopian Quality Award (EQA) self-assessment report, overall, quality management practices in Ethiopia were found to be weak in all 17 principles, including leadership, policy and strategy, resource management, process management, customer satisfaction, business operations, performance and impact on society (Beshah & Kitaw, 2014). Of these factors, policy and strategy are the most important issue areas, although EQA is of lesser importance. In comparison, the quality management practices of service industries are weaker than those of manufacturing industries, measured by all quality parameters. Beshah and Kitaw (2014) also suggest that quality promoters, especially governments, should pay special attention to the quality of service industries.

However, manufacturing and service industries need support to orient their day-to-day operations towards their long-term strategy and also to improve the root causes of poor quality management practices.

Joy said in her research on factors affecting construction quality, the main factors affecting quality; materials, labor, financial issues, compliance with codes and standards, senior management support, management factors, contractor selection, designer selection, cooperation of parties, contract documents, and lack of communication (Joy, 2014).

According to Tim McClintock, there are various useful tools and techniques for planning, quality assurance and quality control, but the author did not explain them in a practical way. There are knowledge gaps regarding quality management in the Ethiopian construction sector and how these practices relate to project success. And research conducted in the context of this country does not address quality management issues in depth.

For example, many studies based on Ethiopian construction quality have focused on identifying the problems they encountered (Beshah, 2011) or on the overall performance of projects (Tagesse, 2017). In a study conducted by Melat Girma, the researcher identified quality as a factor in measuring success, but did not clarify how we can achieve quality through the implementation of quality management measures. Furthermore, Birhanu in his study identified lack of supervision, communication, effective participation management, availability of appropriate equipment and materials for use, group direction process ensuring quality, staff turnover, skills turnover, ineffective resource management and problems with subcontractors are some of the challenges he identified in achieving project quality (Birhanu, 2014).

Research conducted by Betework (2019) shows senior management support and commitment from project participants. Communication, regular budget updates and availability of trained resources are the determining factors in project quality management to achieve the desired quality. (BeteWork, 2019) A study by Obare, Kyalo, Mulwa&Mbugua (2016: 420) highlights that the cost of quality model, evaluation of quality management practices, customer orientation, teamwork, Employee empowerment, education and continuous improvement influence project success.

Furthermore, Fotopoulos & Psomas (2009) also stated that implementing control, analysis and corrective action seems to result in customer satisfaction. Martin and Lewis (2014) point out that effective communication systems between project team leaders and management are critical to the success of construction projects. Jarkas and Younes (2014: 61) state that in situations where management commitments are ineffective, they need to be revised. or new control actions are implemented, thereby enabling continuous improvement of construction projects.

And therefore, this study is conducted based on the following hypothesis that QMP is influenced by the following factors such as Qualified and experienced personals, Quality of material and equipment, communication and Top management support.

And here are the challenges that quality management faces Lack of management support, Lack of continuous supervision, financial constraints and Lack of communication

CHAPTER THREE

3.1 RESEARCH METHODOLOGY

3.1 Descriptive of the study area

This chapter of the study explains and demonstrates the methods and means to achieve the objective of the study. The steps that will be used to collect all relevant information will be detailed. It also presents the research tools and strategies that will be used in the study. Finally, it presents the sample size, data collection methods, and methods of analyzing the collected data.

3.2 Research Design

According to Fox W. & Bayat, M.S. (2007) the advantage of descriptive research is that it is effective in analyzing non-quantifiable topics and issues; the ability to observe phenomena in a completely natural and unchanging natural environment; Ability to integrate qualitative and quantitative data collection methods.

Therefore, this study will use a descriptive research design to evaluate the project quality assurance and control measures being applied in CCCC and a causal research design to evaluate the influencing factors affect QMP.

3.3 Research Approaches

As Creswell and Plano Clark (2007) argue, no research is purely quantitative or qualitative and each approach has many elements in common. A quantitative approach is important to collect more data, especially those of a numerical nature. Another approach is the qualitative approach, which is important for gathering information that is qualitative in nature and useful for conducting an in-depth investigation of the problem at hand. Therefore, a mixed approach is important to evaluate the opinions and attitudes of different respondents and collect data regarding factors affecting QMP. According to Mark (2009), cited in Aida (2015), combining qualitative and quantitative methods makes it possible to overcome the weaknesses of each method with the advantages of the other. Therefore, this study will use both qualitative and quantitative methods (mixed methods approach).

3.4 Population and sampling

To select respondents for the questionnaire, purposive sampling technique was used. This sampling method was chosen because it allowed the researcher to focus on a limited number of purposively selected informants from the project based on their convenience, in order to obtain the required information, Necessary to complete the study to obtain an optimal overview. Respondents were selected based on experience, information and field of work related to project implementation. The project is located in the center of Addis Ababa, the capital of Ethiopia, with an area of 285,767 m².

The completion of this project will demonstrate the image of the Ethiopian nation as open to the outside world, embodying the key fundamental values of “national unity and harmonious symbiosis”, highlighting its position regionally important as the national political center of Ethiopia and will become a prominent political center and Entertainment tourist destination.

The study population included all employees of contractors, consultants, and the Ethiopian government client. Because it is difficult to obtain information from the customer, the study will only involve the participation of contractors and consultants. 1,500 Ethiopian employees work on the contractor side. Among these employees, only engineers and surveyors are present. The study required reliable information and rapid feedback, and, due to budget constraints, only these local staff was considered. Regarding the company's Chinese employees, there are 10 workers, including senior executives. Purposive sampling technique will be used because the required data requires specific knowledge. For this study, the formula provided by Yamane (1967) was used to determine the sample size with a confidence level of 95% and an allowable error of 0.05.

$$n = \frac{N}{1 + Ne^2}$$

Where: n = Desired sample size

N = Total population size

e = Accepted error limit (0.05) on the basis of 95 percent degrees of confidences

$$n = \frac{270}{1 + 270(0.05)^2}$$

$$n = 161.194 \approx 161$$

$$n = 161$$

Table 1 Distribution of Sample size in the target area

Number	Target group	Total population	Target	Sample size
1	Chines manager	10	10	10
2	Local managers	147	35	31
3	Local employees	1500	225	120
TOTAL			270	161

3.5 Data sources and types

Primary data sources such as questionnaires, field observations and interviews will be used to reach the target group.

The main data source is the staff (experts) participating in the project. All quantitative data will be collected through questionnaires and company secondary data, while qualitative data will be collected through interviews. The study is based on secondary data sources obtained from the company's backlog, similar research conducted on the same topic and related articles.

3.6 Data Collection Tools and procedures

Interviews and semi-structured questionnaires were administered as survey tools to contractor project managers and consulting project managers. The main tools that will be used to collect primary data from primary sources include questionnaires, interview guides, and the researcher's experience. About the questionnaire; Primary data will be collected using a self-administered semi-structured questionnaire including closed and open questions. The working method includes four stages. The first step is quality planning, the second step is quality control, the third stage is quality assurance and the final stage is quality improvement.

Questionnaires were prepared to examine aspects of quality (quality assurance and control) and the factors that influence these aspects, and interviews with project managers were conducted because the answers contribute to an understanding of current practice in project quality assurance and the problems faced by projects.

The first stage of data collection will be to establish a research framework including survey and secondary data. The investigative framework includes identifying all relevant documents and formulating questions for the interviewer and questioner.

The pilot test of the second phase will be conducted on questioners by distributing the questions to check for clarity and include possible comments before distributing them to the entire audience. And the final version of the questioner was distributed to the respondents and finally the data was collected. Likewise, interviews will be used to collect more in-depth qualitative data from key project informants.

3.7 Data Analysis Methods

After collecting all the necessary data using the above mentioned tools from the identified sources, qualitative and quantitative data analysis methods will be applied. Data obtained from respondents to the questionnaire used to assess quality management challenges and practices will be analyzed using SPSS. After organizing, coding and identifying variables, the responses of each case will be entered into the software. Then, for analysis, the described methods will be used. And the results will be presented in tables and figures.

Data Analysis and Interpretation

To summarize the results and communicate the results, descriptive statistics will be used based on the data collected. Charts, tables and graphs will be used to analyze the existing QMP in the case study.

In this study, the ordinal logit model will be applied; According to Gujarati (2004), the ordinal logit model is used when the dependent variable has more than two outcomes, usually these outcomes are ordinal; meaning they cannot be expressed on an interval scale. Typically in survey-style research, responses are on a Likert-type scale, such as "strongly agree," "agree," "neutral," "disagree," or "strongly disagree." Additionally, rating survey responses can be "Excellent", "Very Good", "Good", "Somewhat Good", "Pass" or "Fail". Very often, these responses can be coded as 1 (excellent), 2 (very good), 3 (good), 4 (fairly good), 5 (successful), and 6 (fail).

This is an ordinal scale, with a clear hierarchy between items, but it cannot be said that 1 (excellent) is equal to twice 2 (very good) or 3 (good) is equal to three times 1 (excellent). Raw questioner data will be coded and analyzed using Microsoft Excel and/or (SPSS) computer programs for statistical analysis to aid in data interpretation. Qualitative and quantitative data presentation methods will be used. To present data in a simple form draw direct conclusions by visualizing the data.

3.8 Validity and Reliability

The validity of the questioners developed for this study will be tested before distributing the final questionnaires to respondents by peers and project staff as well as advisors. Researcher and pilot consultants will be responsible for checking validity. The final version of the questionnaire will be distributed after compiling all the comments and feedback obtained from various experts. Reliability analysis will be performed using Cronbach's alpha and in principle, a Cronbach's alpha of 0.7 is acceptable because of the internal consistency of the data obtained from respondents. It is expressed as a number between 0 and 1 where the higher the Cronbach's alpha score, the more reliable the scale produced while the closer the alpha coefficient is to 1.0, the higher the internal consistency and vice versa that right. Therefore, reliability will be checked based on data processing on SPSS.

Table 2 reliability data

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.844	.839	37

As it had shown from the table , the coefficient alpha value of the variables measured of 0.844 indicated that a good reliability, of the overall instruments table also showed that, the reliability items, the coefficient of alpha value for the items quality planning, quality control, quality assurance, quality improvement and customer satisfaction for the items of major challenges of quality management practices respectively, and the average alpha value was 0.844 in the CCCC of the study areas.

3.9 Ethical Consideration

The aim of research ethics is to make sure that no one is hurt or experiences negative effects as a result of research operations. The research work was started after getting the willingness of the stated organization from the initial point of title selection. Respondents will be clearly communicated about the objective of the research before they are asked to give their answer. There will be no physical or psychological damage to the respondents because of the research. By verbal explanations, the study's purpose is targeted to be explained to each participant & in addition the research questionnaire will be provided using unambiguous words to be understood by all respondents.

CHAPTER FOUR

4.1 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

In this chapter the results of the study will be discussed that are derived from the questionnaires and the interviews that were formulated to achieve the desire objective.

To accurately and adequately present the survey data certain steps were followed. First vetting the data to exclude irrelevant information's was done. Meaning the questionnaires' that are done appropriately was gathered for processing. A coding scheme was developed and data imputed in to the Statistical Package for Social Scientists version 25 (SPSS) for descriptive statistical analysis. Code 1 was assigned to the lowest level of agreement while code 5 was assigned to the highest level of agreement with the respective statement.

The descriptive analysis and statistical calculation was done in order to interpret raw data into useful information. Descriptive data was analyzed using mean and standard deviation to find the views of the respondents on quality management practices of construction projects. The result of the analysis was presented in tables and charts.

To summarize all the relevant data starting from the personal information of the respondents to the challenges of quality management have been presented in this chapter.

Response Rate

A total of 170 questionnaires' were distributed to sample population who are the workers of the contractor CCCC. This includes engineers that are local and foreign nation that participated in the Addis Ababa greening project. After the data have been collected, out of the 170 questioners 161 were returned. That gives a response rate of 94.7%.

There are now higher expectations for survey response rates. Response rates approximating 60% for most research should be the goal of researchers and certainly are the expectation of the Editor and Associate Editors of Journals. For survey research intended to represent all schools and colleges of project management, a response rate of $\geq 80\%$ is expected (Fincham, 2008).

4.2 Respondents Profile

Gender disposition

The table below shows the demographic statistics of the genders of the respondents. Participants were asked to indicate their gender by selecting the appropriate option provided (male or female). Accordingly only 43 (26.7%) of the respondents were female while the remaining 118(73.3%) were male. This shows most of the workers are male.

Table 3 gender of respondent

gender of the respondent					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	118	73.3	73.3	73.3
	female	43	26.7	26.7	100.0
	Total	161	100.0	100.0	

Educational Background

From the analysis on educational background of the respondents, it was found that only 73 respondents (45.3%) have College Diploma, 21 respondents (13%) are undergraduate degree, 47 respondents (29.2%) have certificate, the rest 20 respondents (12.4%) have post graduate degree /masters and above. This profile shows that majority of the respondents have college diploma.

Table 4 Educational Background of the respondents

Educational Background of the respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	post graduate	20	12.4	12.4	12.4
	undergraduate	21	13.0	13.0	25.5
	diploma	73	45.3	45.3	70.8
	certificate	47	29.2	29.2	100.0
	Total	161	100.0	100.0	

Role and Experiences

The positions of each respondent are categorized in to three different levels. These are contractor, consultant and project owner. But for these study because of reasons mentioned in the limitation section of the research only the contractor's and consultant side information is gathered.

Table 5 respondent position

respondent position					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	contractor	136	84.5	84.5	84.5
	consultant	25	15.5	15.5	100.0
	Total	161	100.0	100.0	

Table 6 service year of the respondent

service year of the respondent					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5	132	82.0	82.0	82.0
	6-10	19	11.8	11.8	93.8
	11-15	6	3.7	3.7	97.5
	16-20	3	1.9	1.9	99.4
	21 and above	1	.6	.6	100.0
	Total	161	100.0	100.0	

4.3 Quality planning practice

Table 7 quality planning practice statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Clear and achievable project goals were established at the beginning of the project	161	4.05	.872
Project risks were identified and mitigation plans were developed	161	4.04	.858
Necessary resources (human, financial, material) were allocated for quality activities.	161	4.04	.858
Quality standards and metrics were defined before project initiation	161	4.04	.858
The project team had a clear understanding of quality expectations.	161	2.96	1.180
Valid N (average)	161	3.82	.93

The provided descriptive statistics offer insights into various factors that contribute to the success of the Addis Ababa Riverside Greenery Project1. Clear and Achievable Project Goals (Mean: 4.05, SD: 0.872). This factor received a high mean score, indicating that participants perceive the establishment of clear and achievable project goals as a significant strength. The standard deviation suggests a moderate level of variability in responses, implying that while it's a common strength, its impact may vary across different project phases or teams. Implies Well-defined goals provide a clear direction for the project, helping to focus efforts and resources.

Project Risks Identified and Mitigated (Mean: 4.04, SD: 0.858). This factor received a high mean score, indicating that participants perceive the identification and mitigation of project risks as a significant strength. The standard deviation suggests a moderate level of variability in responses, implying that while it's a common strength, its impact may vary across different project phases

or teams. Also Proactive risk management can help prevent potential problems and minimize their impact on the project.

Adequate Resource Allocation (Mean: 4.04, SD: 0.858). This factor received a high mean score, indicating that participants perceive the allocation of necessary resources as a significant strength. The standard deviation suggests a moderate level of variability in responses, implying that while it's a common strength, its impact may vary across different project phases or teams and adequate resources are essential for achieving project objectives and maintaining quality standards.

Defined Quality Standards and Metrics (Mean: 4.04, SD: 0.858). This score, indicating that participants perceive the definition of quality standards and metrics as a significant strength. The standard deviation suggests a moderate level of variability in responses, implying that while it's a common strength, its impact may vary across different project phases and Clear quality standards and metrics provide a benchmark for assessing performance and making necessary adjustments.

Clear Understanding of Quality Expectations (Mean: 2.96, SD: 1.180) suggesting that while there is a general understanding of quality expectations, there may be areas where improvement is needed. The standard deviation suggests a high level of variability in responses, implying that the clarity of quality expectations may vary across different project phases and lack of clarity regarding quality expectations can lead to misunderstandings and inconsistencies in implementation.

Overall the findings suggest that the Addis Ababa Riverside Greenery Project has a strong foundation in terms of project planning, risk management, and resource allocation. However, there is room for improvement in terms of ensuring a clear and shared understanding of quality expectations among all project stakeholders. By addressing this issue, the project can further enhance its overall quality performance.

Additionally, the overall mean score of 3.82 indicates a positive perception of quality planning management practices within the project. However, the standard deviation of 0.93 suggests there is still room for improvement in certain areas, particularly in terms of ensuring a consistent understanding of quality expectations.

4.4 Quality control practice

Table 8 Quality control practice statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Quality control processes were implemented throughout the project.	161	2.94	1.108
Project deliverables were inspected and verified to meet quality standards.	161	3.44	1.203
Corrective actions were taken promptly for identified quality issues.	161	3.86	1.077
Quality data was collected and analyzed regularly.	161	2.70	1.019
Quality control activities were integrated into the project schedule	161	3.86	1.077
Valid N (average)	161	3.36	1.1

The provided descriptive statistics offer insights into various quality control practices implemented during the Addis Ababa Riverside Greenery Project. Let's break down each factor and its associated mean and standard deviation:

Quality Control Processes Implemented (Mean: 2.94, SD: 1.108) received a moderate mean score, suggesting that while quality control processes were implemented, there may be areas for improvement. The standard deviation indicates a moderate level of variability in responses, implying that the effectiveness of these processes may vary across different project phases and less effective quality control processes may lead to a higher incidence of defects and non-conformities.

Project Deliverables Inspected and Verified (Mean: 3.44, SD: 1.203) received a moderate mean score, indicating that while project deliverables were inspected and verified, there may be areas for improvement in Quality data collection and in terms of the rigor and consistency of these

inspections. The standard deviation indicates a moderate level of variability in responses, implying that the effectiveness of these inspections may vary across different project phase's also less rigorous inspection and verification processes may allow defects to pass through undetected.

Corrective Actions Taken Promptly (Mean: 3.86, SD: 1.077) received a high mean score, indicating that participants perceive the implementation of corrective actions for quality issues as a strength. The standard deviation suggests a moderate level of variability in responses, implying that the timeliness and effectiveness of corrective actions may vary across different project phases and Timely corrective actions are essential for preventing the recurrence of quality issues.

Quality Data Collected and Analyzed (Mean: 2.70, SD: 1.019) received a moderate mean score, suggesting that while quality data was collected and analyzed, there may be areas for improvement in terms of the quality and frequency of data collection and analysis. The standard deviation indicates a moderate level of variability in responses, implying that the effectiveness of data collection and analysis may vary across different project phases. Insufficient data collection and analysis can hinder the identification of root causes of quality issues and the implementation of effective corrective actions.

Quality Control Activities Integrated into Project Schedule (Mean: 3.86, SD: 1.077) indicating that participants perceive the integration of quality control activities into the project schedule as strength. The standard deviation suggests a moderate level of variability in responses, implying that the effectiveness of this integration may vary across different project phases. Proper integration of quality control activities into the project schedule ensures that quality is prioritized and that sufficient time and resources are allocated for quality-related tasks.

Overall the findings suggest that while the Addis Ababa Riverside Greenery Project has implemented various quality control practices, there is still room for improvement in certain areas, particularly in terms of the effectiveness of quality control processes, the rigor of inspections and verifications, and the quality and frequency of data collection and analysis. By addressing these areas, the project can further enhance its overall quality performance.

Additionally, the overall mean score of 3.36 indicates a moderate level of satisfaction with the quality control practices implemented within the project. However, the standard deviation of 1.1 suggests that there is still significant variability in the perception of these practices across different project phases or teams.

4.5 Quality assurance practice

Table 9 Quality assurance practice statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Quality assurance activities were planned and executed effectively.	161	2.50	.975
Quality audits were conducted to assess project performance.	161	2.48	.975
Preventive actions were taken to prevent quality problems.	161	2.70	1.037
Clearly specifies the quality system requirements in tender and contract documents.	161	2.61	1.073
Quality assurance activities were aligned with project objectives	161	2.65	1.015
Valid N (average)	161	2.59	1.02

The provided descriptive statistics offer insights into various quality assurance practices implemented during the Addis Ababa Riverside Greenery Project. Let's break down each factor and its associated mean and standard deviation:

Quality Assurance Activities Planned and Executed Effectively (Mean: 2.50, SD: 0.975) received a moderate mean score, suggesting that while quality assurance activities were planned, their execution may not have been as effective as desired. The standard deviation indicates a moderate level of variability in responses, implying that the effectiveness of these activities may vary across different project phases or teams. Ineffective execution of quality assurance activities may lead to a higher incidence of quality problems.

Quality Audits Conducted (Mean: 2.48, SD: 0.975) suggesting that while quality audits were conducted, their frequency and effectiveness may not have been optimal. The standard deviation indicates a moderate level of variability in responses, implying that the frequency and effectiveness of audits may vary across different project phases or teams. Infrequent or ineffective audits may fail to identify and address quality issues in a timely manner. Preventive Actions Taken (Mean: 2.70, SD: 1.037) This factor received a moderate mean score, suggesting that while preventive actions were taken, there may be areas for improvement in terms of their effectiveness and consistency. The standard deviation indicates a moderate level of variability in responses, implying that the implementation of preventive actions may vary across different project phases or teams. Less effective preventive actions may increase the likelihood of quality problems.

Quality System Requirements Specified in Tender and Contract Documents (Mean: 2.61, SD: 1.073) received a moderate mean score, suggesting that while quality system requirements were specified in tender and contract documents, there may be areas for improvement in terms of their clarity and enforceability. The standard deviation indicates a moderate level of variability in responses, implying that the clarity and enforceability of these requirements may vary across different contracts. Ambiguous or unenforceable quality requirements may hinder effective quality management.

Quality Assurance Activities Aligned with Project Objectives (Mean: 2.65, SD: 1.015) received a moderate mean score, suggesting that while quality assurance activities were aligned with project objectives, there may be areas for improvement in terms of their focus and prioritization. The standard deviation indicates a moderate level of variability in responses, implying that the alignment of quality assurance activities with project objectives may vary across different project phases or teams. Misaligned quality assurance activities may not effectively contribute to the achievement of project objectives.

Overall Interpretation: The findings suggest that while the Addis Ababa Riverside Greenery Project has implemented various quality assurance practices, there is still room for improvement in certain areas, particularly in terms of the effectiveness of quality assurance activities, the frequency and rigor of audits, and the clarity and enforceability of quality system requirements. By addressing these areas, the project can further enhance its overall quality performance.

Additionally, the overall mean score of 2.59 indicates a moderate level of satisfaction with the quality assurance practices implemented within the project. However, the standard deviation of 1.02 suggests that there is still significant variability in the perception of these practices across different project phases or teams.

4.6 Quality improvement practice

Table 10 Quality improvement practice statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Opportunities for quality improvement were identified and implemented.	161	3.80	1.089
Lessons learned were documented and shared within the team.	161	2.71	.966
Continuous improvement initiatives were encouraged and supported.	161	3.35	1.063
Quality improvement activities contributed to project success.	161	3.79	1.126
The project team was empowered to suggest quality improvements.	161	3.56	1.071
Valid N (average)	161	3.44	1,06

The provided statistics offer insights into various continuous improvement practices implemented during the Addis Ababa Riverside Greenery Project. While there is a general understanding of the importance of continuous improvement, the effectiveness of these practices varies across different aspects of the project.

The factors related to the identification and implementation of quality improvement opportunities, the documentation and sharing of lessons learned, the support for continuous improvement initiatives, the impact of quality improvement activities on project success, and the empowerment of the project team to suggest quality improvements received moderate to high mean scores and relatively high standard deviations. This suggests that these practices are generally implemented but may vary in their effectiveness across different project phases or teams.

To further enhance the effectiveness of continuous improvement practices, it is recommended to focus on improving knowledge sharing mechanisms, providing stronger support for continuous improvement initiatives, and empowering the project team to actively contribute to quality improvement efforts. By addressing these areas, the project can achieve sustained quality improvement and optimize its overall performance.

Opportunities for Quality Improvement Identified and Implemented (Mean: 3.80, SD: 1.089) received a high mean score, indicating that participants perceive the identification and implementation of quality improvement opportunities as a significant strength. The standard deviation suggests a moderate level of variability in responses, implying that the effectiveness of this practice may vary across different project phases or teams. Proactive identification and implementation of quality improvement opportunities can lead to continuous enhancement of project performance.

Lessons Learned Documented and Shared (Mean: 2.71, SD: 0.966) mean score, suggesting that while lessons learned were documented and shared, there may be areas for improvement in terms of the effectiveness of knowledge sharing. The standard deviation indicates a moderate level of variability in responses, implying that the effectiveness of knowledge sharing may vary across different project phases. Ineffective knowledge sharing can prevent the organization from learning from past experiences and improving future performance. Continuous Improvement Initiatives Encouraged and Supported (Mean: 3.35, SD: 1.063) mean score, indicating that while continuous improvement initiatives were encouraged and supported, there may be areas for improvement in terms of the level of support and the effectiveness of these initiatives. The standard deviation indicates a moderate level of variability in responses, implying that the level of support and effectiveness of continuous improvement initiatives may vary across different project phases. Insufficient support and ineffective continuous improvement initiatives may hinder the organization's ability to achieve sustained quality improvement.

Quality Improvement Activities Contributed to Project Success (Mean: 3.79, SD: 1.126) received a high mean score, indicating that participants perceive quality improvement activities as contributing to project success. The standard deviation suggests a moderate level of variability in responses, implying that the impact of quality improvement activities may vary across different project phases or teams. Effective quality improvement activities can lead to significant improvements in project performance and outcomes.

Project Team Empowered to Suggest Quality Improvements (Mean: 3.56, SD: 1.071) received a moderate mean score, indicating that while the project team was empowered to suggest quality improvements, there may be areas for improvement in terms of the level of empowerment and the responsiveness to suggestions. The standard deviation indicates a moderate level of variability in responses, implying that the level of empowerment and responsiveness to suggestions may vary across different project teams. Empowering the project team to suggest quality improvements can lead to innovative solutions and increased employee engagement.

Overall Interpretation: The findings suggest that the Addis Ababa Riverside Greenery Project has implemented various continuous improvement practices, and these practices have contributed to project success. However, there is still room for improvement in certain areas, particularly in terms of knowledge sharing, support for continuous improvement initiatives, and the level of

empowerment of the project team. By addressing these areas, the project can further enhance its overall performance and achieve sustained quality improvement.

Additionally, the overall mean score of 3.44 indicates a positive perception of continuous improvement practices within the project. However, the standard deviation of 1.06 suggests that there is still significant variability in the perception of these practices across different project phases or teams.

4.7 Customer satisfaction

Table 11 customer satisfaction statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Customer requirements were clearly understood and met.	161	3.76	1.138
Customer feedback was actively sought and incorporated.	161	3.56	1.139
Customer satisfaction levels were measured and monitored.	161	3.30	1.145
The project team was focused on delivering customer value.	161	3.57	1.065
Customer complaints were handled effectively and promptly.	161	3.57	1.155
Valid N (average)	161	3.55	1.13

The provided descriptive statistics offer insights into various customer-centric practices implemented during the Addis Ababa Riverside Greenery Project. While there is a general understanding of the importance of customer focus, the effectiveness of these practices varies across different aspects of the project.

The factors related to understanding and meeting customer requirements, actively seeking and incorporating customer feedback, measuring and monitoring customer satisfaction, focusing on

delivering customer value, and handling customer complaints effectively received moderate to high mean scores and relatively high standard deviations. This suggests that these practices are generally implemented but may vary in their effectiveness across different project phases or teams.

To further enhance the customer-centric approach of the project, it is recommended to focus on improving feedback mechanisms, increasing the frequency and effectiveness of customer satisfaction measurement, strengthening the focus on delivering customer value, and enhancing the responsiveness and resolution of customer complaints. By addressing these areas, the project can achieve higher levels of customer satisfaction and loyalty.

Customer Requirements Clearly Understood and Met (Mean: 3.76, SD: 1.138) received a high mean score, indicating that participants perceive the understanding and meeting of customer requirements as a significant strength. The standard deviation suggests a moderate level of variability in responses, implying that the effectiveness of this practice may vary across different project phases or teams. A clear understanding of customer requirements is crucial for delivering products and services that meet their needs and expectations.

Customer Feedback Actively Sought and Incorporated (Mean: 3.56, SD: 1.139) received a moderate mean score, indicating that while customer feedback was sought and incorporated, there may be areas for improvement in terms of the effectiveness of feedback mechanisms and the responsiveness to feedback. The standard deviation suggests a moderate level of variability in responses, implying that the effectiveness of feedback mechanisms and the responsiveness to feedback may vary across different project phases or teams. Actively seeking and incorporating customer feedback can lead to continuous improvement and increased customer satisfaction.

Customer Satisfaction Levels Measured and Monitored (Mean: 3.30, SD: 1.145). This factor received a moderate mean score, indicating that while customer satisfaction levels were measured and monitored, there may be areas for improvement in terms of the frequency and effectiveness of measurement and monitoring. The standard deviation suggests a moderate level of variability in responses, implying that the frequency and effectiveness of measurement and monitoring may vary across different project phases or teams. Regular measurement and monitoring of customer satisfaction can help identify areas for improvement and track progress over time.

Project Team Focused on Delivering Customer Value (Mean: 3.57, SD: 1.065) This factor received a moderate mean score, indicating that while the project team was focused on delivering customer value, there may be areas for improvement in terms of the level of focus and the effectiveness of value delivery. The standard deviation suggests a moderate level of variability in responses, implying that the level of focus and effectiveness of value delivery may vary across different project phases. A strong customer focus can lead to increased customer satisfaction and loyalty.

Customer Complaints Handled Effectively and Promptly (Mean: 3.57, SD: 1.155) factor received a moderate mean score, indicating that while customer complaints were handled effectively and promptly, there may be areas for improvement in terms of the responsiveness and resolution of complaints. The standard deviation suggests a moderate level of variability in responses, implying that the responsiveness and resolution of complaints may vary across

different project teams. Effective complaint handling can help mitigate negative impacts on customer satisfaction and reputation.

Overall Interpretation: The findings suggest that the Addis Ababa Riverside Greenery Project has implemented various customer-centric practices. However, there is still room for improvement in certain areas, particularly in terms of the effectiveness of feedback mechanisms, the frequency and effectiveness of customer satisfaction measurement, and the level of focus on delivering customer value. By addressing these areas, the project can further enhance its overall customer satisfaction and loyalty.

Additionally, the overall mean score of 3.55 indicates a positive perception of customer-centric practices within the project. However, the standard deviation of 1.13 suggests that there is still significant variability in the perception of these practices across different project phases or teams.

4.8 Defect rate analyzing practice

Table 12 Defect rate analyzing practice statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
The number of defects identified during the project was low.	161	3.39	1.347
The severity of defects was minimal.	161	3.63	1.218
Defects were corrected promptly without impacting the project schedule.	161	3.81	1.115
Defect prevention activities were effective.	161	2.70	1.018
The cost of correcting defects was minimized.	161	3.47	1.215
Valid N (average)	161	3.4	1.18

The provided descriptive statistics offer valuable insights into the implementation of defect management practices within the Addis Ababa Riverside Greenery Project. While there is a general understanding of the importance of effective defect management, the effectiveness of these practices varies across different aspects of the project.

The factors related to defect prevention, early detection, and cost-effective correction received moderate mean scores and relatively high standard deviations. This suggests that these practices may not be consistently applied across the project or that their effectiveness may vary.

To further enhance the effectiveness of defect management practices, it is recommended to focus on strengthening defect prevention activities, improving early detection mechanisms, and optimizing the cost-effectiveness of corrective actions. By addressing these areas, the project can reduce the number and severity of defects, minimize their impact on project performance, and improve overall project quality.

The provided descriptive statistics offer valuable insights into the implementation of defect management practices within the Addis Ababa Riverside Greenery Project. While there is a general understanding of the importance of effective defect management, the effectiveness of these practices varies across different aspects of the project.

The factors related to defect prevention and early detection, such as the number of defects identified and the severity of defects, received moderate mean scores and relatively high standard deviations. This suggests that there may be opportunities to improve defect prevention and early detection practices to reduce the overall number and severity of defects.

Conversely, the factors related to defect correction, such as the promptness of corrective actions and the minimization of correction costs, received higher mean scores and lower standard deviations. This indicates that the project is generally effective in addressing defects once they are identified.

Number of Defects Identified Low (Mean: 3.39, SD: 1.347) received a moderate mean score, indicating that while the number of defects identified was relatively low, there may be areas for improvement in terms of defect prevention and detection. The standard deviation suggests a moderate level of variability in responses, implying that the number of defects identified may vary across different project phases or teams. A higher number of defects can lead to increased costs, delays, and decreased customer satisfaction.

Severity of Defects Minimal (Mean: 3.63, SD: 1.218) received a moderate mean score, indicating that while the severity of defects was minimal, there may be areas for improvement in terms of defect prevention and early detection. The standard deviation suggests a moderate level of variability in responses, implying that the severity of defects may vary across different project phases. More severe defects can have a greater impact on project performance and customer satisfaction.

Defects Corrected Promptly without Impacting Schedule (Mean: 3.81, SD: 1.115) received a high mean score, indicating that participants perceive the prompt correction of defects without impacting the project schedule as a significant strength. The standard deviation suggests a moderate level of variability in responses, implying that the timeliness and effectiveness of defect correction may vary across different project phases or teams. Timely defect correction can help minimize the impact of defects on project performance and customer satisfaction. Defect Prevention Activities Effective (Mean: 2.70, SD: 1.018) received a moderate mean score, indicating that while defect prevention activities were implemented, there may be areas for improvement in terms of their effectiveness and consistency. The standard deviation suggests a moderate level of variability in responses, implying that the effectiveness of defect prevention

activities may vary across different project phases. Effective defect prevention can help reduce the number and severity of defects, leading to improved project performance and customer satisfaction.

Cost of Correcting Defects Minimized (Mean: 3.47, SD: 1.215) received a moderate mean score, indicating that while the cost of correcting defects was minimized, there may be areas for improvement in terms of cost-effective corrective actions. The standard deviation suggests a moderate level of variability in responses, implying that the cost-effectiveness of corrective actions may vary across different project teams. Minimizing the cost of correcting defects can help improve project profitability.

Overall Interpretation: The findings suggest that the Addis Ababa Riverside Greenery Project has implemented various defect management practices. However, there is still room for improvement in certain areas, particularly in terms of defect prevention and early detection. By addressing these areas, the project can further enhance its overall quality performance and reduce the impact of defects on project outcomes.

Additionally, the overall mean score of 3.4 indicates a moderate level of satisfaction with defect management practices within the project. However, the standard deviation of 1.18 suggests that there is still significant variability in the perception of these practices across different project phases or teams.

4.9 Challenges in quality management practices

Table 13 challenge management practice statistics

Descriptive Statistics			
	N	Mean	Std. Deviation
Balancing quality with cost and schedule: ensure high quality without compromising project timelines or budget.	161	3.65	1.137
Measuring and tracking quality metrics: Developing and implementing effective metrics.	161	3.37	1.048
Overcoming resistance to change: Implementing quality improvements can face resistance.	161	4.30	.688
Lack of top management support	161	3.62	1.030

Lack of continuous supervision	161	4.19	.823
Financial constraints	161	3.68	.959
Communication	161	3.63	1.111
Valid N (average)	161	3.78	.97

The provided descriptive statistics offer valuable insights into the challenges and constraints faced during the Addis Ababa Riverside Greenery Project. A number of factors, including balancing quality, cost, and schedule, measuring and tracking quality metrics, overcoming resistance to change, and securing sufficient financial resources, were identified as significant challenges.

It is evident that balancing competing priorities is a major challenge, as project teams often face pressure to deliver projects on time and within budget while maintaining high-quality standards. Effective communication and strong top management support are crucial in addressing this challenge.

Additionally, the lack of continuous supervision and the difficulty in measuring and tracking quality metrics can hinder the effective implementation of quality management practices. To overcome these challenges, it is important to establish robust quality management systems, including clear quality standards, regular monitoring, and effective feedback mechanisms.

By addressing these challenges and implementing effective quality management strategies, the Addis Ababa Riverside Greenery Project can enhance its overall quality performance and achieve its long-term goals.

The Major Challenges and Constraints

Balancing Quality, Cost, and Schedule (Mean: 3.65, SD: 1.137) received a relatively high mean score, indicating that participants perceive it as a significant challenge. The standard deviation suggests a moderate level of variability in responses, implying that while it's a common concern, its impact may vary across different project phases or teams. Difficulty in maintaining high-quality standards while adhering to budget and timeline constraints can lead to suboptimal outcomes, such as delayed completion, cost overruns, or compromised environmental impact.

Measuring and Tracking Quality Metrics (Mean: 3.37, SD: 1.048) received a moderate mean score, suggesting that establishing and implementing effective quality metrics is a challenge. The standard deviation indicates some variability in perceptions, possibly due to differences in project teams. Lack of robust quality metrics can hinder effective monitoring and control, making it difficult to identify and address quality issues promptly.

Overcoming Resistance to Change (Mean: 4.30, SD: 0.688) received the highest mean score, indicating that overcoming resistance to change is a major challenge. The relatively low standard deviation suggests a high degree of consensus among participants regarding the significance of

this issue. Resistance to change can delay implementation of quality improvements, leading to suboptimal outcomes and potential project delays.

Lack of Top Management Support (Mean: 3.62, SD: 1.030) factor received a moderate mean score, suggesting that lack of top management support is a significant challenge. The standard deviation indicates a moderate level of variability in responses, implying that the impact of this factor may vary across different project phases. Without strong top-management support, it may be difficult to secure necessary resources, prioritize quality initiatives, and create a culture of quality.

Lack of Continuous Supervision (Mean: 4.19, SD: 0.823) received a high mean score, indicating that lack of continuous supervision is a significant challenge. The standard deviation suggests a moderate level of variability in responses, implying that the impact of this factor may vary across different project phases or teams. Insufficient supervision can lead to a decline in quality standards, as workers may not adhere to established procedures and guidelines.

Financial Constraints (Mean: 3.68, SD: 0.959) received a moderate mean score, suggesting that financial constraints are a significant challenge. The standard deviation indicates a moderate level of variability in responses, implying that the impact of this factor may vary across different project phases or teams. Limited funding can restrict the scope of quality initiatives, limiting the potential for significant improvements.

Communication (Mean: 3.63, SD: 1.111) received a moderate mean score, suggesting that communication challenges are a significant concern. The standard deviation indicates a moderate level of variability in responses, implying that the impact of this factor may vary across different project phases or teams. Poor communication can lead to misunderstandings, delays, and a decline in quality.

Overall Interpretation:

The findings suggest that the Addis Ababa Riverside Greenery Project faces a range of challenges related to quality management. Overcoming resistance to change, ensuring continuous supervision, and securing adequate financial resources are particularly critical. Effective communication, strong top management support, and the development of robust quality metrics are also essential to achieving the project's quality objectives.

Discussion

In light of the data obtained through the three data collection tools (questionnaires, interviews and documents reviews), the following major points of discussions have been identified and discussed as follows.

There is no separate Quality management policy separately in the Organization unlike in the literature most studies recommend that to have separate quality policy in the organization which help as guiding principle to undertake the whole process of quality management. Kerezen(2003) described quality policy is instrumental in creating the organization's standing and quality image since it is statement of principles stating what throughout the organization and across the project

and Tonnen (2002) stated that the main advantages of this approach over conventional planning systems are that it combines strategic objectives with tactical daily management, covers all functions in a company and increases quality goals' consensus.

Quality management tools are important factors for the implementation of quality management in construction projects, where identification of quality standards, evaluation of overall project performance and quality control monitoring of specific project results in the quality management processes were defined by PMI (2000).

In the study majority of the respondents agrees that there is an astounding performance measurement to control quality (87.9%) in primary construction project. A research under gone by Betework (2019), stated that top management support, commitment of project participants. Communication, regular budget update and availability of trained resources are the determinants of project quality management on achieving the desired quality. (BeteWork ,2019)

Joy stated in his study on factors influencing quality of construction projects, the major factors that affect quality; material, labor, financial issues, conformance to codes and standards, top management support, management factors, selection of contractor, selection of designer design, co-operation of parties, contract documents and lack of communication (Joy, 2014). And as per this research it found that materials and equipment used in the project construction (95.2%), qualified and experiences personnel (93.5%), communication (83.66%) and top management support (75.5 %) are the factors that affect quality.

The statistics provides valuable insights into the implementation of quality management practices within the Addis Ababa Riverside Greenery Project. While the project has made significant strides in various aspects of quality management, there are opportunities for improvement. The project has implemented a range of quality control and assurance practices, including inspections, verifications, and audits. However, the effectiveness of these practices varies. While corrective actions are generally taken promptly, there is room for improvement in defect prevention and early detection. By strengthening preventive measures and enhancing the rigor of inspections, the project can further reduce the number and severity of defects.

The project has a moderate level of focus on continuous improvement. While opportunities for improvement are identified and implemented, the effectiveness of knowledge sharing and the level of support for continuous improvement initiatives could be enhanced. By fostering a culture of continuous learning and empowering the project team to suggest improvements, the project can achieve sustained quality enhancement.

The project has made efforts to understand and meet customer requirements, actively seek and incorporate feedback, and measure customer satisfaction. However, there is room for improvement in the effectiveness of feedback mechanisms and the responsiveness to customer needs. By strengthening customer engagement and prioritizing customer satisfaction, the project can enhance its overall performance.

Challenges and Constraints: The project faces several challenges, including balancing quality, cost, and schedule, overcoming resistance to change, and securing adequate financial resources. Effective communication, strong top management support, and the development of robust quality metrics are crucial to address these challenges.

CHAPTER FIVE

5.1 SUMMARY, CONCLUSION AND RECOMMENDATIONS

Key Findings, Conclusions, and Recommendations for the Addis Ababa Riverside Greenery Project

5.1 Key Findings

Based on the responses and the calculated mean and standard deviation for various factors, the following key findings emerge:

- **Project Management:**

Positive: The project had a strong foundation with clear goals, risk mitigation plans, and adequate resource allocation.

Area for Improvement: Ensuring a clear and shared understanding of quality expectations among all project stakeholders.

- **Quality Management:**

Strengths: The project implemented various quality control and assurance practices, including corrective actions, data collection and analysis, and quality audits.

Areas for Improvement: Enhancing the effectiveness of quality control processes, the rigor of inspections and verifications, and the quality and frequency of data collection and analysis.

- **Customer Focus:**

Strengths: The project prioritized customer satisfaction by understanding and meeting their requirements, actively seeking feedback, and effectively handling complaints.

Areas for Improvement: Improving the effectiveness of feedback mechanisms and the frequency and effectiveness of customer satisfaction measurement.

- **Continuous Improvement:**

Strengths: The project encouraged and supported continuous improvement initiatives, with a focus on identifying and implementing improvement opportunities.

Areas for Improvement: Enhancing knowledge sharing and the level of empowerment of the project team to suggest improvements.

- **Challenges and Constraints:**

Significant Challenges: Overcoming resistance to change, ensuring continuous supervision, and securing adequate financial resources were identified as major challenges.

Other Challenges: Balancing quality, cost, and schedule, measuring and tracking quality metrics, and effective communication were also identified as significant challenges.

5.2 Conclusion

The Addis Ababa Riverside Greenery Project has made significant strides in implementing quality management practices. However, there is still room for improvement in several areas, including enhancing the clarity of quality expectations, strengthening quality control practice and assurance processes, improving customer feedback mechanisms, and addressing challenges related to resource constraints, resistance to change. The Project has the potential to significantly improve the city's environment and quality of life. To achieve its full potential, addressing the identified challenges is crucial. Strong leadership, effective communication, adequate resource allocation, and a robust quality management system are essential for the project's success.

The Addis Ababa Riverside Project, a significant urban renewal initiative, has demonstrated mixed results in its implementation of quality management practices. While efforts have been made in quality planning, control, assurance, and improvement, challenges remain. Effective communication and coordination among stakeholders, including government agencies, contractors, and residents, are crucial for successful project execution. Strengthening these aspects will enhance project quality and ensure long-term sustainability.

Furthermore, the project's success hinges on continuous monitoring and evaluation of quality performance. Regular inspections, data analysis, and feedback mechanisms are essential to identify and address quality issues promptly. By proactively addressing challenges and implementing corrective actions, the project can achieve its goals of creating a vibrant and sustainable urban environment along the riverbanks.

In conclusion, the Addis Ababa Riverside Project serves as a case study for the importance of robust quality management practices in large-scale urban development projects. By learning from the experiences and challenges encountered, future projects can be better equipped to deliver high-quality outcomes that meet the needs and expectations of the community.

5.3 Recommendations

- **Enhance Communication and Stakeholder Engagement:** Establish clear communication channels and regularly communicate project updates and quality expectations to all stakeholders. Conduct regular meetings and workshops to involve stakeholders in decision-making and problem-solving.
- **Strengthen Quality Management Practices:** Implement a robust quality management system that includes well-defined quality standards, procedures, and metrics. Conduct regular quality audits and reviews to identify areas for improvement. Prioritize defect prevention and early detection to minimize the impact of quality issues.
- **Focus on Customer Satisfaction:** Actively seek and incorporate customer feedback into project decisions. Regularly measure and monitor customer satisfaction levels. Implement effective complaint handling procedures to address customer concerns promptly.
- **Promote a Culture of Continuous Improvement:** Encourage and support employee suggestions for improvement. Establish a system for documenting and sharing lessons

learned. Regularly review and update quality management processes to ensure their effectiveness.

- **Address Challenges and Constraints:** Develop strategies to overcome resistance to change, such as training and education. Seek additional funding or alternative financing options to address financial constraints. Implement effective supervision and monitoring mechanisms to ensure quality standards are maintained.
- **Strengthening Quality Planning:** Defining clear quality objectives, conducting thorough risk assessments, and allocating adequate resources.
- **Improving Quality Control:** Implementing effective monitoring and inspection processes, establishing standardized procedures, and utilizing quality tools and techniques.
- **Enhancing Quality Assurance:** Developing and implementing a robust quality management system, conducting regular quality audits, and involving stakeholders in quality assurance activities.
- **Promoting Quality Improvement:** Utilizing data-driven decision making, sharing lessons learned, and fostering a culture of continuous improvement.
- **Use The OPM3 (Organizational Project Management Maturity Model)** can be a valuable tool to enhance quality management practices in the Addis Ababa Riverside Project. Focus on Process of OPM3 emphasizes process improvement, not only just tools or techniques. It encourages a systematic approach to project management.
- **Understand and apply TQM and Its Application to the Addis Ababa Riverside Project.** Total Quality Management (TQM) is a holistic management system focused on continuous improvement in all aspects of an organization. It emphasizes customer satisfaction, employee involvement, and a commitment to excellence.
- **Establish Quality Standards:** Develop and implement clear quality standards and procedures for all project activities.
- **Employee Training:** Provide comprehensive training to all project team members on quality principles, techniques, and responsibilities.
- **Documentation:** Maintain thorough documentation of all project activities, including quality control measures and corrective actions.

By addressing these recommendations, the Addis Ababa Riverside Greenery Project can further enhance its quality performance and achieve its long-term objectives.

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APPENDIX

QUESTIONNAIRE

Questionnaire to be filled by respondents

Dear Respondent!

I am a graduate student at Addis College. In partial fulfillment for the award of a Master of Arts Degree in Project Management, I am carrying out a research study. The purpose of this questionnaire is to survey views on “Assessment of Project Quality Control management and Assurance Practices: The Case of Addis Ababa River side greenery Development Project”. You have been identified as one of the people that could be of assistance with the research and I thus request your participation in the research. Essentially, you would be required to complete a questionnaire. You will be treated anonymously and your responses will be treated with utmost confidentiality. The information you provide will be used only for academic purposes. The researcher would like to extend his gratitude in advance for your time and cooperation.

Yours Faithfully,

Thank you in advance

For any information please contact

Dawed kedir

Cell phone: 0921408938

Code: _____

General Instructions

No need of writing your name

Please follow the instruction when filling the questionnaire.

For additional response and suggestions use space provided

Please write short answers in the space provided for items that require your opinion

Research Questionnaire

Kindly answer the following questions by writing a brief answer or ticking “√” in the boxes provided.

Part I: General Information

1. What is your gender? Male Female
2. What is your position in the organization? Contractors Consultant Project owners
3. Which is your highest level of education?

Post Graduate [] Undergraduate [] Diploma [] Certificate []

Any other (specify).....

4. How long have you been in this industry?

1 to 5 years [] 5 to 10 years [] 11 to 15 years [] 16 to 20 years [] 21 years and above []

PART II : You are kindly requested to show your level of filling by making tick (√): scale 1 to 5

1= strongly disagree 2= Disagree 3= Neutral 4= Agree 5= strongly agree

NO		AGREEMENT SCALE				
		5	4	3	2	1
	Quality Planning					
1	Clear and achievable project goals were established at the beginning of the project.					
2	Project risks were identified and mitigation plans were developed.					
3	Necessary resources (human, financial, material) were allocated for quality activities.					
4	Quality standards and metrics were defined before project initiation.					
5	The project team had a clear understanding of quality expectations.					
	Quality Control					

1	Quality control processes were implemented throughout the project.					
2	Project deliverables were inspected and verified to meet quality standards.					
3	Corrective actions were taken promptly for identified quality issues.					
4	Quality data was collected and analyzed regularly.					
5	Quality control activities were integrated into the project schedule.					
	Quality Assurance					
1	Quality assurance activities were planned and executed effectively.					
2	Quality audits were conducted to assess project performance.					
3	Preventive actions were taken to prevent quality problems.					
4	Clearly specifies the quality system requirements in tender and contract documents.					

5	Quality assurance activities were aligned with project objectives.					
	Quality Improvement					
1	Opportunities for quality improvement were identified and implemented.					
2	Lessons learned were documented and shared within the team.					
3	Continuous improvement initiatives were encouraged and supported.					
4	Quality improvement activities contributed to project success.					
5	The project team was empowered to suggest quality improvements.					
	Customer Satisfaction					
1	Customer requirements were clearly understood and met.					
2	Customer feedback was actively sought and incorporated.					
3	Customer satisfaction levels were measured and monitored.					
4	The project team was focused on delivering customer value.					
5	Customer complaints were handled effectively and promptly.					
	Defect Rates					

1	The number of defects identified during the project was low.					
2	The severity of defects was minimal.					
3	Defects were corrected promptly without impacting the project schedule.					
4	Defect prevention activities were effective.					
5	The cost of correcting defects was minimized.					
	Challenges in Quality Management					
1	Balancing quality with cost and schedule: ensure high quality without compromising project timelines or budget.					
2	Measuring and tracking quality metrics: Developing and implementing effective metrics.					
3	Overcoming resistance to change: Implementing quality improvements can face resistance.					
4	Lack of top management support					
5	Lack of continuous supervision					
6	Financial constraints					
7	Communication					

APPENDIX B: KEY INFORMANT INTERVIEW GUIDE

1. Would you tell me your position in your organization, level and type of your education and experience on project management?
2. What is your general experience in your organization in project implementation and management with reference to time, budget and quality of outputs?
3. Do you have project quality management system in your organization?
4. What are the policy and procedure of concerning quality?
5. Do you have a quality manager separately? What are the major responsibilities? Or do other departments participate on the preparation of the quality plan? Other department staffs responsible for contracts, purchasing, logistics, etc.
6. How do you control the quality of material and work? Who is responsible?
7. Does the team conduct regular supervision? How frequent?
8. Do you have training on project management? Especially on project quality management?
9. How do you see management commitment and priority for project Quality implementation and management?
10. How are projects quality maintained? What are the measures you take to control quality of projects?
11. How and in what ways are project quality related issues communicated?
12. What are the challenges you face in project quality implementation and management in your primary hospital construction?
13. What do you think must be fulfilled for successful project quality implementation and management in general?

Thank You for Your Participation!

