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SCHOOL OF GRADUATE STUDIES

**Assessment of Project Quality Management Practices in La Gare Mixed Use
Development Project**

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**ASSESSMENT OF PROJECT QUALITY MANAGEMENT PRACTICES IN
LA GARE MIXED USE DEVELOPMENT PROJECT**

BY:

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**A THESIS SUBMITTED TO ST. MARY UNIVERSITY, SCHOOL OF
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ST MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
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DECLARATION

I, the undersigned, declare that this thesis proposal entitled “Assessment of Project Quality management Practices in La Gare mixed use development project” is my original work, and has not been presented by any other person for an award of a degree in this or any other University.

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ENDORSEMENT

This is to certify that this project work, “**Assessment of Project Quality management Practices in La Gare mixed use development project**” undertaken by **Mahlet Mulugeta** for the partial fulfillment of Master of project management at St. Mary University, is an original work and not submitted earlier for any degree either at this University or any other University.

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Acronyms

GTP- Growth and Transformation Plan

EQA- European Quality Award

PMBOK- Project Management Body of Knowledge

PMI- Project Management Institute

ISO- International Organization for Standardization

PM4DEV- Project Quality Management for Development Organization

SPSS- Statistical Package for the Social Sciences

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ABSTRACT

The construction industry is a key contributor of economic growth of countries in the world. Quality is one of the most critical problems for construction industry and leads to huge losses in country. The quality management practices such as; quality planning, quality control, quality assurance and quality improvement should be applied in any project specially in a construction project to make sure the project is a success. This study primarily aimed at analyzing the quality management practices of La Gare mixed use development project. The study identified the perception of the contractors and consultant who have direct relation with quality. The study focused on assessing quality management practices implementation and assessed whether these practices: quality control, quality planning, quality assurance were applied. The study also identified 8 major factors that affect quality management implementation. The identified 8 major factors were lack of management commitment and support, project staff resistance to adopt quality systems, too much documentation, and inadequate internal communication, lack of proper training and education, lack of skilled labors, problems due to contractor's performance and problems due to consultant's performance. Based on the quality management practices a questionnaire was developed and surveyed to stakeholders who participate in La Gare mixed use development project. For the data analysis descriptive statistics was used and it also used both primary and secondary data to collect the data needed for the study. The collected data were analyzed using SPSS (version 25). The results have shown that the project implements the quality management practices and lack of skilled labor, lack of management commitment and support were the main factors identified that affect the implementation problems. The recommendation forwarded will build up a capacity of the contractor, develop a strategy to give training and education for employees, strengthen top management support and develop a skilled labor.

Keywords: *factors affecting quality management implementation, La Gare mixed use development, building construction*

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

As World Bank's report implies Ethiopia's economy experienced strong, broad-based growth averaging 9.9% a year from 2007/08 to 2017/18, mainly construction, and services accounted for most of the growth. The government is implementing the second phase of its Growth and Transformation Plan which will run to 2019/20.

PMI Guide (2017) defines project quality management as the process and activities of the performing organization that determine quality policies, objectives and responsibilities so that the project will satisfy the needs for which it was undertaken. Hrit Zemichael (2020)

Edwards Deming one of the famous quality expert and scholar emphasized that the keys to quality are in management's hand. According to him 85 percent of the quality problems are due to the system and only 15 percent are due to the employees. In other words, with a reliable system average people can achieve good results while, in the absent of the system it is difficult to achieve quality target. Joseph Juran is other famous quality scholar, Juran introduced his ideas into (Juran Trilogy) which can be described as quality control: monitoring techniques to correct sporadic problems, quality improvement: a break through sequence to solve chronic problems and quality planning: an annual quality program to institutionalize managerial control and review.

A study made in area of project management practices of construction projects in Ethiopia indicates that there is weakness in the way projects are managed. The results of a study by Taddesse, Zakaria and Zoubeir has revealed the unsatisfactory construction project management

procedures and project management tools and techniques, and it was also found that quality deviates from pre-determined or specified requirement by 21-40%. (Taddesse, Zakaria and Zoubeir, 2016)

In construction industry the quality is an essential part in construction projects. It becomes a competitive advantage and, has a large impact in organization success and profit (Mosab E, 2018). Quality is a culture an attitude, without the commitment and support of the top management of the organization, no quality program is going to success. Also no matter how qualified resources the organization has, without quality system the output will always be poor (Mosab E, 2018).

From the perspective of a construction company, quality management in construction projects should mean maintaining the quality of construction works at the required standard so as to obtain customers' satisfaction that would bring long term competitiveness and business survival for the companies (Tan & Abdul-Rahman, 2005). Quality management is critically required for a construction company to sustain in current construction market which is highly challenging and competitive. Harris and McCaffer (2001) explained that quality management has to provide the environment within which related tools, techniques and procedures can be deployed effectively leading to operational success for a company.

The project the study had undertaken is La Gare mixed used development project which is initiated by eagle hills in collaboration with the city government of Addis Ababa. The project is located in the heart of Addis Ababa in the historical setting of the La Gare train station. The stage of construction is about 73% complete. Mohamed Alabbar, chairman of eagle hills stated “our vision is to bring attention to such locations across the globe, revealing the charm and

potential within them and inviting future residents and tourists to consider making new homes for themselves there”. La Gare in addition to creating a brand- new skyline and city center, it is set to contribute to the local market by creating jobs, further bolstering market sentiment and energizing the economy. La Gare is a project of passion that will be developed on a land of heritage. It will be built upon the historical grounds of La Gare train station that has stood the test of time, and this project, will live in people’s collective memories for even longer.

1.2 Statement of the Problem

Construction industry plays an essential role in our country’s economy. Although the country doesn’t hold mega projects on its own working with other countries is of a great opportunity to help the country in regards of the construction industry. In our country Ethiopia there are different kinds of complains that arise due too poor quality of buildings. Defects, delays, cost overrun are the major problems of the country’s construction industry. (Garomsa, 2019)

Quality management practices have fallen short of expectation in the construction industry. As described in a research by Fetene Nega, building projects that are delivered within estimated cost, specified quality and calculated time can greatly satisfy client, contractor and consultant and the project can be said it is delivered in a successful manner. But as indicated by the research of building projects in the country are not delivered successfully. (Fetene Nega, 2008)

There is no doubt that there is a current and indeed pressing need to examine the implementation of quality management in many construction industries. Therefore, quality must be recognized from the point of importance, as the same level as the scope of project, time and costs. Christine, (2010:191) said ‘if the quality doesn’t meet the customer’s expectation, nothing else matters.’ Yet construction projects in Ethiopia failed to accomplish not only their quality but also the triple

constraint which are necessary for one project to be categorized as success, which is time, cost and scope. Werku & Jha (2016)

Through analyses of the EQA self-assessment report evaluation, generally, quality management practices in Ethiopia was found to be low in all the tenets including leadership, policy and strategy, resources management, process management, customer satisfaction, business performance and impact on society (Birhanu & Daniel 2014).

Even though some quality management processes were deployed: due to lack of continuous improvements , and limitations on the implementation of regular budget update, commitment of all participant, top management support and availability of skilled man power, the responses show that project quality management performance was at a low rating(status). Tigist Bete (2019)

The practices or functions of quality are not practiced and it is the main factor that leads to poor quality. Azeb Fiseha (2021) states that quality problems arise from labor skills and miscommunication among labors. As Ethiopia is a multi-lingual country, miscommunication often occurs among the labors. She also declares in her study that contractors are aware of quality but they focus on finishing the work on time and with profit rather than focusing on quality. Design related issues are also other factors dictated in her study and it is stated that issues like completeness and consistency of design document is very important. Another study conducted by Bealu Girma, 2021 indicates that challenges of quality management arises from lack of management support, lack of continuous supervision, lack of communication and lack of financial constraint though financial constraints is a lower factor than the other. The first study which is conducted by Azeb Fiseha mainly focused on the quality management system as a

whole and the second study which is conducted by Bealu Girma, focuses on the quality management practices. The findings of the studies indicated that the contractors are aware of quality management but its applications are very low. Therefore, this study will try to address quality management practices in detail and provide adequate knowledge regarding quality management.

1.3 Research questions

The study will seek to answer the questions stated below

- ❖ Does the project have a well-defined quality plan?
- ❖ Are quality control and assurance well applied?
- ❖ Is the project team well aware of quality management practices?
- ❖ Is the top management highly involved in the quality process?

1.4 Research objectives

General objective

The general objective of this study is to assess quality management practices in La Gare mixed use development project

Specific objectives

- ❖ To assess if the project has a well-structured quality plan
- ❖ To assess whether quality control and assurance is well applied
- ❖ To assess whether the project team is well aware regarding quality and the practices
- ❖ To determine the level of top management involvement in the quality process

1.5 Significance of the study

This study is important for the current project by alerting them the status of the project regarding quality. It will also help other construction projects which are to be implemented by creating awareness of quality management practices. The findings of the study will also help contractors to improve in other projects they may hold. It will help contractors in identifying the major quality attributes and will act as an aid for future projects they may hold. As for stakeholders it will create awareness about quality management practices and it will help them analyze other projects in this manner. Finally it will act as a stepping stone for further studies.

1.6 Scope of the study

This study is limited to quality management practices in La Gare mixed use development project. The geographical boundary of the study is in Addis Ababa at the historical place of La Gare train station. Generally the study is limited to assessing the quality management practices and the challenges of implementing quality management in La Gare mixed use development project. This study is limited to the project team, contractors and project owners to get validate information regarding the quality management of the project and due to possible shortage of time and finances.

1.7 limitation of the study

The study focused on the assessment of quality management practices in La Gare mixed use development project located in A.A city. Due to time and money shortage the study was conducted in A.A city only and research participants were stakeholders who are participating on construction projects such as contractors and consultants.

1.8 Organization of the study

Five chapters were organized to make up this research. The first chapter goes over the background of the study, problem statement, and objective of the study, significance of the study, scope, and limitations. The second chapter examines review of related literature discovered in professional publications and texts that is relevant to the quality management practices in building construction projects. It also includes a number of factors that contribute to quality management. The third chapter discusses the research methods, particularly the survey method. The fourth part presents the study's data presentation, analysis and interpretation. Based on the findings of the chapters four, the last chapter consists of a summary, conclusion, and recommendation.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Theoretical literature review

This section covers the review of related literature of different scholars in the area of quality management. It deals with theoretical, empirical and conceptual framework of various researchers work regarding project, project management, project quality management and such. This chapter deals with different reviewed literature from secondary sources such as books, journals, articles and such.

2.1.1 What is project?

Projects are often implemented as a means of an organization's strategic plan. Operations and projects are different primarily in that operations are ongoing and repetitive while projects are temporary and unique. A project can thus be defined in terms of its distinctive characteristics- a project is a temporary endeavor undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite end. Unique means that the product or service is different in some distinguishing way from all other products or services. For many organizations, projects are a means to respond to those requests that cannot be addressed within the organization's normal operational limits. (PMBOK, 2000)

Projects are undertaken at all levels of the organization. They may involve a single person or many thousands. Their duration ranges from a few weeks to more than five years. Projects may involve a single unit of one organization or may cross organizational boundaries, as in joint ventures and partnering. Projects are critical to the realization of the performing organization's business strategy because projects are a means by which strategy is implemented. (PMBOK, 2000)

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

2.1.2 Project management

Project management is the application of knowledge, skills, tools and techniques to project activities to meet project goals. It is the application of a set of principles, method, and techniques to effectively plan and control a project work. Project management is the discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals. It is accomplished through the application and integration of the project management process of initiating, planning, executing, monitoring, controlling and closing (PMBOK 2000).

Project management is the discipline of using established principles, procedures and policies to successfully guide a project from conception through completion. Often abbreviated as PM, project management requires the application of those principles and procedures as well as tools and technologies to ensure that a project can be completed in a way that meets all articulated outcomes, from spending limits to end-goal objectives. The project management plan is expected to effectively and efficiently guide all aspects of a project from start to finish, with the ideal goal of delivering the outcome on time and on budget. (Mary Pratt, 2018)

2.1.3 Elements of project management

A guide to the project management body of knowledge divides project management into five phases which the first one is initiating phase. The goal of project initiation is to broadly define the project. This process usually begins with a business case or project charter. The second phase is the project planning phase. It is key to successful project management and focuses on developing a road map for the team to follow. During this phase, the scope of the project is defined and a project management plan is developed. It involves identifying the cost, quality, available resource and a realistic timetable. At this time roles and responsibilities are clearly defined, so everyone involved knows what they are accountable for. The third phase is project execution, during this phase the team develops and completes deliverables. This phase begins with a kick-off meeting, is marked by the onset of status reports and updates, and transition into performance and monitoring as the project progresses. The fourth phase which is project performance and monitoring ensures that project results align with the management plan. Project managers use key performance indicators to determine if the project is on track. Once a project is complete, the team must formally close it. The last phase project closure helps a team identify things that went well and areas for improvement.

2.1.4 What is quality?

The key to project quality lies in making a more effective, meaningful transfer of proven quality methods to a general project management domain. The first step is to answer the question “What is quality?”(Kenneth Rose, 2005)

The ISO 10006, a standard for quality in project management defines it as; “unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraint of time, cost and resources”.

The definition of quality has shifted from mere conformance to customer expectations to a phenomenon where a product or service can be rendered at low cost while maintaining its dependability and uniformity (Gitlow, et al., 2005).

Hoonakker et al (2010) defined quality in the construction industry as the capability to meet customer expectations, capability for projects to stay within budget and within schedule, reduced defects and reworks, and projects' conformance to the ISO 9000 standards of quality.

In Juran's Quality Handbook, 5th edition (1999) quality pioneer Joseph M. Juran states that quality has two meanings that are critically important to its management. Quality means "features of products which meet customer needs and thereby provide customer satisfaction." Quality improvement related to features usually costs more. Quality also means "freedom from deficiencies." These deficiencies are errors that require rework (doing something over again) or result in failures after a product has been delivered to a customer. Such failures may result in claims, customer dissatisfaction, or dire consequences to the user. Quality improvement related to deficiencies usually costs less. Juran's view considers products, defects, and customers.

2.1.5 Quality and the Triple Constraint

The project "triple constraint" includes time, cost, and scope. All three elements are of equal importance to project success and to the project manager. Project managers typically try to balance the three when meeting project objectives, but they may make trade-offs among the three during project implementation in order to meet objectives and satisfy customers. Quality is a fourth among equals. It may be most closely associated with scope because scope is based on customer requirements and quality is closely associated with customer requirements. This linkage addresses quality of the product of the project. There is another important quality consideration: quality of the project itself. Quality processes, attuned to the scope specifications,

will ensure a quality product. Quality processes that maintain cost and schedule constraints will ensure a quality project. Some recent project management literature suggests that quality is part of a quadruple constraint consisting of time, cost, scope, and quality. This approach is wrong-headed for one simple reason: Project managers routinely make trade-offs among the triple constraint to meet project objectives. A project manager should never, ever trade off quality during project implementation. (Kenneth Rose, 2005)

2.1.6 Benefits of Quality

The benefits of quality in project performance are many. First, a quality project and product will yield customer satisfaction. If you meet or exceed requirements and expectations, customers will not only accept the results without challenge or ill feeling, but may come back to you for additional work when the need arises. They may well become that oh-so-important unpaid sales representative and generate additional work from new customers through referrals. A satisfied customer may perceive greater value than originally anticipated, which goes beyond customer satisfaction to customer delight. Reduced costs are another benefit. Quality processes can reduce waste, improve efficiency, and improve supplies, all things that mean the project may cost less than planned. As costs go down, profits may go up (depending on the pricing arrangement in the contract on which the project is based) or reduced costs may mean more sales to an existing customer within existing profit margins. Finally, better products, better project performance, and lower costs translate directly into increased competitiveness in an ever-more-global marketplace. This is the essence of a quality chain reaction described by W. Edwards Deming: improve quality, reduce costs, improve productivity, capture the market, stay in business, and provide more jobs.

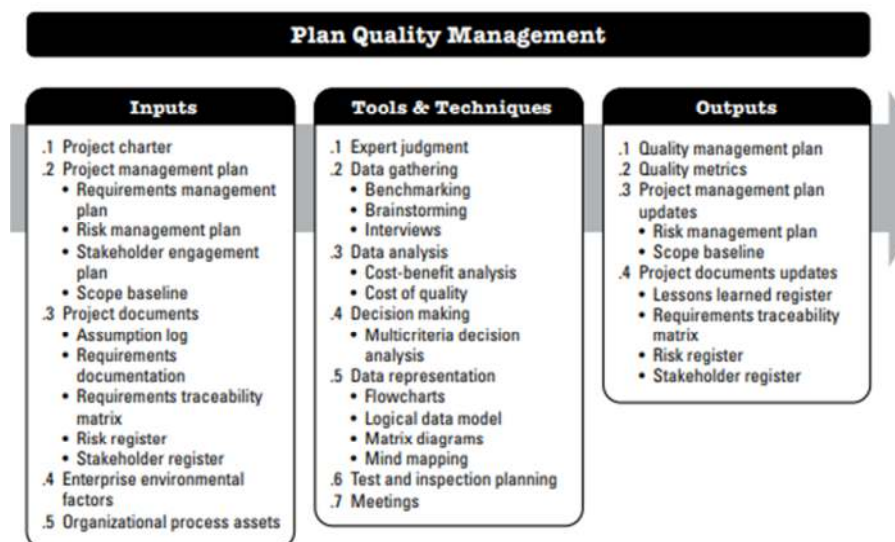
2.1.7 Quality management processes

The PMBOK Guide states that quality management processes “...include all the activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken.” This description is sufficiently general to cover the needs of the project in terms of time, cost, and scope and the needs of the product of the project or customers of the project in terms of the defined requirements. Project quality management is linked to overall organizational quality management in terms of processes and costs.

2.1.7.1 Quality Planning

The PMBOK Guide defines quality planning as the process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements and/or standards. The key benefit of this process is that it provides guidance and direction on how quality will be managed and verified throughout the project. This process is performed once or at predefined points in the project.

Figure 2.1: Plan Quality Management



The quality management plan is a component of the project management plan that describes how applicable policies, procedures, and guidelines will be implemented to achieve the quality objectives. It describes the activities and resources necessary for the project management team to achieve the quality objectives set for the project. The quality management plan may be formal or informal, detailed, or broadly framed. The style and detail of the quality management plan are determined by the requirements of the project. The quality management plan should be reviewed early in the project to ensure that decisions are based on accurate information. The benefits of this review can include a sharper focus on the project's value proposition, reductions in costs, and less frequent schedule overruns that are caused by rework. (PMBOK, 2017)

2.1.7.2 Quality Assurance

Assurance is the activity of providing evidence to create confidence among all stakeholders that the quality-related activities are being performed effectively; and that all planned actions are being done to provide adequate confidence that a product or service will satisfy the stated requirements for quality. Quality Assurance is a process to provide confirmation based on evidence to ensure to the donor, beneficiaries, organization management and other stakeholders that product meet needs, expectations, and other requirements. It assures the existence and effectiveness of process and procedures tools, and safeguards are in place to make sure that the expected levels of quality will be reached to produce quality outputs.

Harris and McCaffer, (2001) defined quality assurance as a set of activities whose purpose is to demonstrate that an entity meets all quality requirements. Quality Assurance activities are carried out in order to inspire the confidence of both customers and managers, confidence that all quality requirements are being met.

According to Euro Roads, (2006), the main objective of quality assurance measures in information processes is to fulfill a required quality level. By using described probabilistic model, cause and effect diagram, one is able to analyze existing processes and to detect existing quality gaps within these processes.

2.1.7.3 Quality control

Quality control is the use of techniques and activities that compare actual quality performance with goals and define appropriate action in response to a shortfall. It is the process that monitors specific project results to determine if they comply with relevant standards and identifies different approaches to eliminate the causes for the unsatisfactory performance. The goal of quality control is to improve quality and involves monitoring the project outputs to determine if they meet the quality standards or definitions based on the project stakeholder's expectations. Quality control also includes how the project performs in its efforts to manage scope, budget and schedule.

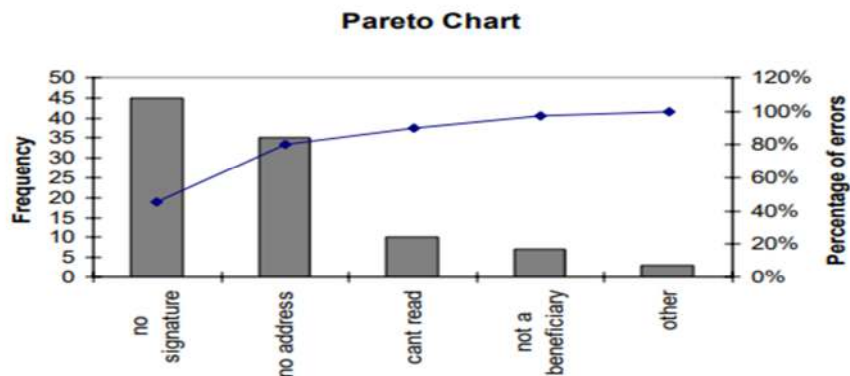
Quality control is the process of monitoring and recording results of executing the quality management activities in order to assess performance and ensure the project outputs are complete, correct, and meet customer expectations. The key benefit of this process is verifying that project deliverables and work meet the requirements specified by key stakeholders for final acceptance. The Quality control process determines if the project outputs do what they were intended to do. Those outputs need to comply with all applicable standards, requirements, regulations, and specifications. Quality control should be performed throughout the project to formally demonstrate, with reliable data, that the sponsor's and/or customer's acceptance criteria have been met. This process is performed throughout the project. (PMBOK, 2017)

2.1.7.3.1 Quality Control Tools

There are a couple of good tools that can be used to control quality on a project, these are cause and effect diagrams, Pareto charts and control charts:

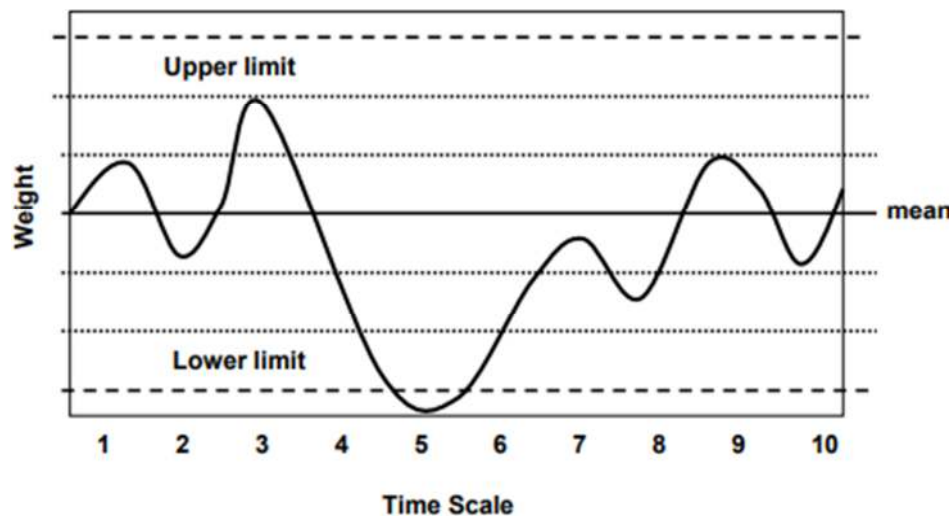
- Cause and Effect Diagram, also known as fishbone diagrams or Ishikawa diagrams (named after Kaoru Ishikawa, a Japanese quality control statistician, who developed the concept in the 1960s, is very helpful to find the root cause of the defect. Cause and effect diagrams show the relationship between the results of problems and the root cause of these problems. (Aditi Malhotra, 2014)
- Pareto Charts; based on Pareto's rule, which states that 80 percent of the problems are often due to 20 percent of the reasons. Over the years, others have shown that the 80/20 rule applies across many disciplines and areas. So it was good idea to identify and focus on that category of defects which covers the maximum portion. It is a special form of vertical bar chart and used to identify the first few major sources responsible for the problem. The problems are rank-ordered according to their frequency and percentage of defects. (Aditi Malhotra, 2014)

Figure 2.2: Pareto chart



- Control Charts; measure the results of processes over time and display the results in the form of a graph. By using control charts one can determine whether process variances are in control or out of control. A control chart works on sample variance measurements, from the samples chosen and measured, the mean and standard deviation are determined. (Aditi Malhotra, 2014)

Figure 2.3: Control chart



2.1.7.4 Quality improvement

It is the systematic approach to the processes of work that looks to remove waste, loss, rework, frustration, etc. in order to make the processes of work more effective, efficient, and appropriate. Quality improvement refers to the application of methods and tools to close the gap between current and expected levels of quality by understanding and addressing system deficiencies and strengths to improve, or in some cases, re-design project processes. A variety of quality improvement approaches exists, ranging from individual performance improvement to redesign

of entire project processes. These approaches differ in terms of time, resources, and complexity, but share the same four steps in quality improvement:

- Identify what you want to improve; the project using the data found in the quality control process identifies the areas that need improvement.
- Analyze the problem or system, the team then investigates the causes for the problem and its implications to the project, the causes may be internal or external to the project.
- Develop potential solutions or changes that appear likely to improve the problem or system, the team brainstorms ideas and potential solutions to the problem, taking in consideration its impact to the project schedule and budget. After careful considerations the team decides and chooses the best alternative.
- Test and implement the solutions. The team may decide to test the solution on a small scale to verify that it is capable of fixing the problem, it testes for the initial assumptions made about the problem and once it confirms that the solution is a viable alternative, it then proceeds to implement in a full scale the solution.

2.2 Empirical review of literature

The majority (40%) of contractor doesn't have quality management system so; we can imagine what kind's work they do. The company depend on the quality meanly achieve the project success in every part like for example meet the deadline, meeting the project cost and create safe environment. Therefore, they have to wake up to apply quality system in their organizations. The contractors involved in building construction projects are aware of the concept of quality and quality management but its application was relatively low, (50%). The contractor's main focuses are more on finishing the work on time and with profit than practicing quality (Azeb, 2021)

Top management is committed in the implementation and practice of quality management plan and the good management made the company to be competent in the construction market. Project quality management is challenged by various factors mainly lack of communication, insufficient management support, financial constraint and continuous supervision (Bealu, 2021).

A research by Abdullah Bustani (2018) in assessment of quality management practices in Nigerian construction industry stated that the findings are suggestive of a generally poor quality management practice in Nigeria. The researcher's also identified quality management plans are rarely produced for construction projects and that quality management and control is pursued after the effect rather than preventative and continuous performance improvement.

The study undertaken by Daniel Ofori (2013) to identify and assess the quality of project management practices as well as the critical factors for projects in Ghana indicates that the critical factors that contribute to the success of a project include, top management support, effective communication, clarity of project purpose and goals and stakeholder management.

Another study made by Birhanu (2011) on quality management and engineering practice and challenges in Ethiopia, was found to be low in all the views including leadership, policy and strategy, resource management, process management, customer satisfaction, business performance and impact on society. Comparatively the service industries quality management is weaker than that of manufacturing industries as measured by all the quality parameters. The findings show that the reasons for poor quality practice are; lack of awareness about the basic concepts of quality and customer's inadequate knowledge about quality. As far as the findings of this research is concerned, so far there is no planned intervention to develop the knowledge of customers that most probably would lead to quality improvements in the industry.

Since quality assurance is applying continuous and intensive quality improvement activities, it showed that it is well implemented in every project sites. The study showed that almost all of quality defects are related to finishing works. The study also stated that almost all respondents replied that they did not face any quality defects related to electric utility and electricity installation. In addition poor quality of partition and finishing work, using of poor quality of construction materials, difficulty to move in the house, difficulty to move in the house for elders, difficulty to move and play in the house for children, lack of enough space for children's playground and green area for family retreat, poor design of roof rain disposal and drainage system are the most significant design and environmental quality defects in these project sites. Generally most of these quality defects are occurred in most of the project sites conducted by the Addis Ababa housing development program. (Abrham H, 2017).

The findings of the study show that Ethiopian construction design and supervision works corporation (ECDSWCo.) implements quality management system. The result shows that the management of (ECDSWCo.) is committed towards implementation of project quality management. But it is revealed that the management is more project quality planning process than the assurance and control. As it can be seen from the analysis there is a better communication of project quality information within project team than between sections and with customers. Finally, it was found out that employees are trained but their involvement in project quality programs was evident (Rahel Dinku, 2017).

A study by (Hrit Zemichael, 2020) indicated that specific targets and actions for quality improvement are communicated and documented by the project team and project's quality standards are communicated but not always. It is also stated in the study that there is inefficient

resource management and even though there is regular supervision in the project it is not adequate.

Generally the findings of the research reveals that there was a medium level of implementation of quality management during the implementation of 40/60 housing project, however, due to the minimal level of continuous improvements and the availability of trained resources, the project could not fully benefit from the best practices that are considered in different literature as good quality management practices. It is evident that the use of tools and techniques and different methodologies that applies for the specific project has an overall effect on the project quality performance. The findings also showed that quality management practitioners in the study agreed with the effects and that the implementation of project quality management processes along with the implementation of regular budget updates, top management support, commitment of all participants and availability of trained resources affects the project quality management performance, however, communication/interaction between project implementers were not considered to affect the quality management performance in this study (Tigist Bete, 2019).

Knowledge gaps

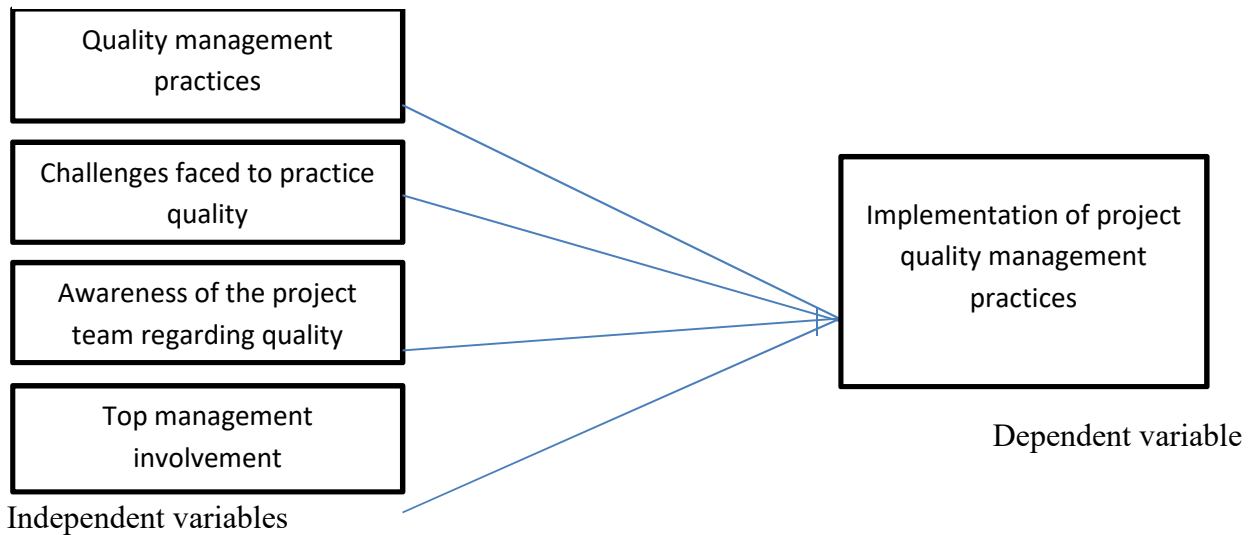
In Ethiopian construction project quality management is still not given much attention although many studies have been made in this regard. Different studies have been made regarding to quality management but most of the studies differ according to their focus point. Construction project due to its uniqueness, needs of high financial investment and resources there was gap of studies from previous researcher in time, scope of study and demography basis on construction industry specifically in Addis Ababa. the construction industry has different challenges and constraint like economic inflation, instability market material price(material escalation), peace and security issues which leads to shortage of material like marble and cement in the industry,

Pandemic outbreak disease across the globe like COVID 19 were not mentioned in the previous researcher in the area of study. This research was proposed to fill this gap and gives and share knowledge for further research on the area of study in the future. And also not many researches have been conducted which are focused to quality management practices.

2.3 conceptual frameworks

Studies stated above reveal factors that affect implementation of project quality management which can be summarized as top management involvement, training, adequate technical skill, communication, and continuous supervision.

Figure 2.4: Conceptual framework



(Source: previous studies of related literature review)

CHAPTER THREE

RESEARCH METHEDODOLOGY

3.1 Research approach

To achieve the objectives of this study and thereby to give answer for research question, quantitative and qualitative research approach was used for analysis.

(Kothari, 2006), stated that a research approach brings to light the fact that there are two basic research approaches, i.e., quantitative, and qualitative research approach. Qualitative research is an approach for getting the meaning of personal and social problems. The process of research includes developing questions and procedures, data collected in the participant's context, data analysis inductively developing from particulars to general themes, and the researcher executing interpretations of the purpose of the data. Quantitative research is an approach for testing objective data by analyzing the relationship among variables. These variables can be measured by typically on tools; so that numbered data can be analyzed using statistical methods. Hence qualitative and quantitative approach was used to assess the implementation of quality management practices in La Gare mixed use development project.

3.2 Research design

Research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data (Trochim, William, 2006).

This study used descriptive method of research as it is a type of research that is used to describe the characteristics of population which collects data that used to answer a wide range of what, when and how questions pertaining to a particular population or group. The study will adopt

mixed research approach which is both qualitative and quantitative as it helps to gain a more complete picture than only qualitative or quantitative.

3.3 Sampling technique

In the study purposive sampling technique was used to select the numbers of population. This sampling method will be chosen because it becomes easier for the researcher to focus on a small or limited numbers of respondents based on the researcher's own judgment. The respondents will be chosen based on their area of work, experience and relationship they have to the project.

3.4 Sample size

The population for the study will include all the employees of the contractors, the consultant and the clients which are eagle hills Ethiopia and the city government of Addis Ababa. There are two contractors in the project which are Rama construction and Elmi construction in which Rama is responsible for the structure of the building whereas Elmi is responsible for the finishing. Since it might be difficult to gain information from the client side the study only involved the contractor and the consultants. About 70 employees are working in the contractor side and out of these employees there are only 40 engineers and 30 consultants. A purposive sampling technique will be used since the required data needs specific knowledge. For this research, the formula provided by Yamane (1967) was used to determine the sample size with 95% confidence level and with 0.05 margin of error.

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

Where: n = Desired sample size N = Total population size e = Accepted error limit (0.05) on the basis of 95 percent degrees of confidences

$$n = \frac{70}{1 + Ne^2}$$

$$\frac{1+70(0.052)^2}{n=70}$$

$$1.175$$

$$n=59.5$$

3.5 Sources of data and data collection methods

According to (Kothari, 2006), to conduct a reliable and accurate research is advisable to use both primary and secondary data sources. Therefore, the study used both primary and secondary data to collect the specific data needed for the research. The primary source of data was obtained using questionnaire and un-structured interview. The primary sources of data were the employees of the contractors and the consultant. Secondary data was obtained from related articles, journals, books and such.

3.6 Data collection tools/ instruments

The survey method was used to collect data as it is a tool which is flexible and exciting. Primary data was collected for the purpose of the research detailed information through a questionnaire based on the fact that they had to be simple, clear and understandable for the respondents and at the same time they should be able to be clarified well by the researcher. Respondents were asked to fill the questionnaire and they have assured that the information will be confidential and only for research purposes. The questioner consisted of two parts, the first part includes the general information of the respondents (education level, work experience and position), and the second part includes closed-ended and open ended questionnaires for factors that grouped into seven based on their characteristics. The respondent was required to rate the implementation of quality management practices using their own experiences on building sites. Client, consultant and contractor's stakeholders were required to express their opinion in the form of ranking on a

Likert scale with the rating of “5” strongly disagree; “4” disagree; “3” neutral ; “2” agree; and “1” strongly agree.

3.7 Methods of Data Analysis

After collecting all required data using the above mentioned instruments from the identified sources, both qualitative and quantitative methods of data analyses were applied. The data obtained from the questionnaire respondents used to assess the quality management practices and challenges was analyzed using SPSS (Version 25). After organizing, coding, and defining variables, responses of the cases will be entered into the software. And results will be presented using tables and figures.

3.8 Validity and Reliability

The validity of questioners developed for this study was checked before distributing the final questionnaires to the respondents by distributing to friends and the advisor of the researcher and pilots were done to check the validity. The final versions of the questioners were distributed after incorporating comments and feedbacks obtained from different professionals.

Reliability is the degree to which a research tool yields consistent results in the same procedure each time it is used under the same situation with the same subjects. An inter-item reliability test was applied to test the reliability of the research instrument. Multiple items were used to estimate a unique concept in the questionnaire. This involved a set of related questions which were designed to measure a certain concept being associated with each other. This reliability test applied by Cronbach’s coefficient (α) value that ranges from 0.5 to 0.7 was considered acceptable by indicating the internal reliability of the questionnaire. A score of greater than 0.7 was regarded as adequate proof of internal consistency please refer Appendix C SPSS output and tabulated summary of reliability Cronbach’s coefficient (α) in table in the next chapter.

3.9 Ethical Consideration

Participants in the study were checked about their voluntary to respond to the question and fully informed about the objectives of the study. Questions were presented in a manner that tends to skew the results or force a certain outcome or answer. The questionnaires were designed in manners that avoid any information that would allow the participants to be identified in the future. Proper acknowledgements and credit were given for all contributions to the research to avoid claims of plagiarism.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

In this chapter the result of the study which is derived from the questionnaires' and interview will be discussed.

To accurately present the survey data certain steps were followed. First clearing 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 was imputed into 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 and meaningful information. Descriptive data was analyzed using frequencies and percentages to find the views of the respondents on quality management practices of the construction project. 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 quality management tools and techniques have been presented in this chapter.

4.1 response rate

A total of 49 questionnaires were distributed to eagle hill Ethiopia. There were two contractors in charge of the project which are Rama and Elmi construction plc. The respondents are contractors and consultants from both construction companies. Out of the 49 questionnaires 40 were returned. This gives a response rate of 81.6%.

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).

Table 4.1 number of responses

	Frequenc y	Percent	Valid Percent
Valid returned	40	81.6	81.6
non- returned	9	18.4	18.4
Total	49	100.0	100.0

(Source: own survey, 2022)

4.2 Respondents profile

4.2.1 Gender disposition

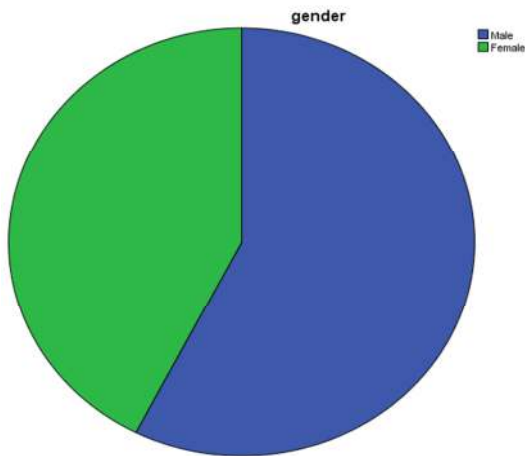
The table and the pie chart below shows the demographic statistics of the genders of the respondents. Participants were asked to indicate their gender by selecting the appropriate option provided (male or female). Accordingly 17 (42.5%) of the respondents were female while the remaining 23(57.5%) were male. The sample population was dominated by male respondents. The response is helpful in getting a dependable response as it has a few differences between the gender dispositions.

Table 4.2 Gender

	Frequency	Percent	Valid Percent
Valid Male	23	57.5	57.5
Female	17	42.5	42.5
Total	40	100.0	100.0

(Source: own survey 2022)

Figure 4.1 Gender distribution of respondents



4.2.2 Educational Background

From the analysis on educational background of the respondents, it was found that 13 respondents (32.5%) have postgraduate/master's degree, 27 respondents (67.5%) are undergraduate degree. This profile shows that majority of the respondents have undergraduate degree or first degree level. The response is helpful in getting dependable response as it consists of respondents which have postgraduate/master's degree and undergraduate degree or first degree level.

Table 4.3 Educational background of respondents

	Frequency	Percent	Valid Percent
Valid postgraduate	13	32.5	32.5
undergraduate	27	67.5	67.5
Total	40	100.0	100.0

(Source: own survey, 2022)

4.2.3 Roles and experience

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's side information is gathered.

Table 4.4 Roles and experience

	Frequency	Percent	Valid Percent
Valid 1 to 5 years	20	50.0	50.0
5 to 10 years	12	30.0	30.0
11 to 15 years	8	20.0	20.0
Total	40	100.0	100.0

(Source: own survey, 2022)

In the above table it shows that none of the respondents have an experience which is 21 years and above. Most of the respondents have an experience of 1 to 5 years (50%). 12 respondents (30%) have experience of 5 to 10 years. But only 8(20%) of the respondents have an experience

of 11 to 15 years. As the response of the respondents indicates the majority of respondents have an experience of 1 to 5 years. It is difficult to get a dependable response rate with these years of experience.

4.3 Priorities given to factors in the company

Table 4.5 Priorities given to factors

Priorities given to factors in the company	Degree of priority		
	Low	Moderate	High
meeting project cost budget		17(42.5)	23(57.5)
meeting project time	4(10.0)	10(25.0)	26(65.0)
meeting health and safety standard	2(5.0)	10(25.0)	28(70.0)
meeting quality standard		12(30.0)	28(70.0)

(Source: own survey, 2022)

In the above table it shows that the company gives high priority to factors such as meeting project cost budget (57.5), meeting project time (65.0), meeting health and safety standard (70.0) and meeting quality standard (70.0). From the table above we can understand that the company gives high priority to meeting health and safety standard as well as meeting quality standard.

Table: 4. 6 Meeting health and safety standard * meeting quality standard Cross tabulation

			meeting quality standard		Total
			moderate	high	
meeting health and safety standard	low	Count	2	0	2
		% within meeting health and safety standard	100.0%	0.0%	100.0%
		% within meeting quality standard	16.7%	0.0%	5.0%
	moderate	Count	8	2	10
		% within meeting health and safety standard	80.0%	20.0%	100.0%
		% within meeting quality standard	66.7%	7.1%	25.0%
	high	Count	2	26	28
		% within meeting health and safety standard	7.1%	92.9%	100.0%
		% within meeting quality standard	16.7%	92.9%	70.0%
Total	Count	12	28	40	
	% within meeting health and safety standard	30.0%	70.0%	100.0%	
	% within meeting quality standard	100.0%	100.0%	100.0%	

(Source: own survey, 2022)

The result above has a value of .655 which shows that there is a moderate value of agreement between the two values which are meeting health and safety standard and meeting quality standard.

Project cost should be adequately estimated and controlled, as poor cost performance has a negative influence on all project components, particularly project quality. (Abas et al, 2015). According to Stojcetovic (2013), today's trendy approaches, such as lowering the cost of project execution, result in a drop in quality which can have a detrimental influence of project success.

According to the response 17(42.5%) of the respondents agreed that meeting project cost budget has moderate priority and 23(57.5%) of the respondents agreed that it has high priority. In relation to the other factors mentioned in the questionnaire this factor is the one that has lower number of respondents in favor of high priority. This shows that the organization has less priority in the factor of meeting cost budget.

According to Romel & Gilberto (2016), the delays on the deliveries are one of the most frequent problems affecting with close to 47%, resulted from a poor application of project time management. The result of project delays affects all the stakeholders that are involved in the project. The study further revealed, despite the poor project time management if more effort dedicated to planning and controlling the project will more likely to succeed on time within the budget and scope.

In this study 4(10.0%) of the respondents indicated that meeting project time has low priority, whereas 10(25.0%) of respondents responded by saying it has moderate priority and the last 26(65.0%) respondents replied by saying it has high priority in the organization. According to meeting cost budget this factor has a bit of higher response of it being a high factor. Still the organization should give more emphasis in meeting project time.

Majority of the respondents replied by indicating that meeting health and safety standard and meeting project quality is given a high priority in the organization.

4.4 Basic information regarding quality and quality management

1) From your point of view, which one of the following words can define quality?

Table 4.7 Definition of quality

	Frequency	Percent	Valid Percent
meeting customer requirements	16	40.0	40.0
conformation to specification	20	50.0	50.0
meeting customer expectation	4	10.0	10.0
Total	40	100.0	100.0

(Source: own survey, 2022)

In the above table respondents answered their definition of quality. 16 respondents (40.0%) agreed that quality is defined as meeting customer requirements. 20 respondents (50.0) agreed that conformation to specification defines quality more. Whereas 4(10.0%) agreed that meeting customer expectation is what defines quality more.

2) What is your organization's perception of quality?

Table 4.8 Perception of quality

	Frequency	Percent	Valid Percent
Valid A competitive advantage	24	60.0	60.0
elimination of defects	16	40.0	40.0
Total	40	100.0	100.0

(Source: own survey, 2022)

The table above describes the organization's perception of quality according to the respondents. 24 respondents (60.0%) responded that a competitive advantage is the organization's perception of quality. Whereas the remaining 16 respondents (40.0%) responded that elimination of defects is more likely perception of the organization.

3) Does your organization implements quality management system/processes?

In this section respondents were asked if the organization implements quality management system/processes and they responded by saying yes or no.

Table 4.9 Quality management system

	Frequency	Percent	Valid Percent
Valid yes	37	92.5	92.5
no	3	7.5	7.5
Total	40	100.0	100.0

(Source: own survey, 2022)

As we can see from the above table most of the respondents (92.5%) responded by saying yes. Only 3 respondents (7.5%) replied by saying no.

4) What type of quality management system is mostly practiced in your organization?

The table below discusses the type of quality management system practiced in the organization. 6 respondents (15.0%) responded that the company practiced ISO 9001 system of quality management. 7 respondents (17.5%) replied by saying that total quality management is the system practiced by the organization. The majority of respondents (42.5%) responded that the organization uses quality control/quality assurance system. Only 7 respondents (17.5%) responded by saying quality improvement is the system the organization practices. Therefore we can understand that the quality management system practiced by the organization is quality control/ quality assurance.

Table 4. 10 Type of quality management system

		Frequency	Percent	Valid Percent
Valid	ISO 9001	6	15.0	16.2
	total quality management	7	17.5	18.9
	quality control/ quality assurance	17	42.5	45.9
	quality improvement	7	17.5	18.9
	Total	37	92.5	100.0
Missing	System	3	7.5	
Total		40	100.0	

(Source: own survey, 2022)

5) What is the major objective of quality management system practiced in your organization?

Table 4.11 Major objective of quality management system

	Frequency	Percent	Valid Percent
Valid increase productivity	19	47.5	47.5
compliance with environment and safety requirement	4	10.0	10.0
to meet customer expectation	17	42.5	42.5
Total	40	100.0	100.0

(Source: own survey, 2022)

In the above table we can see the response of the respondents according to the questions they were asked. Majority of the respondents (47.5%) responded by indicating increasing productivity is the major objective of the organization's quality management system. 4 respondents (10.0%) responded environment and safety requirement is the major objective of quality management system. Whereas 17 respondents (42.5%) responded to meet customer expectation is the major objective of the organization's quality management system. Therefore we can understand that the major objective of quality management system of the organization is to increase productivity and meet customer expectation.

4.5 Project quality planning

4.5.1 Contents of quality plan

Based on the information gathered from different secondary sources a list of contents of quality plan were listed in the questionnaire so that respondents could respond by their level of agreement using likert scale ranging from 1 to 5 from strongly disagree to strongly agree. The lists of the contents provided in the questionnaire are brief description of the project, project quality objectives, roles and responsibilities of project staff, method to check compliance,

inspection, tests, audits etc., organizational objectives to be attained, applicable operating practice, procedures, work instructions, a list of qualified suppliers, performance standards and how performance will be documented, a feedback mechanism for internal and external customer feedback and references or related materials including performance rating

The above mentioned contents of quality plan were presented in the questionnaire and the majority of respondents responded that the organization’s quality plan contains all the above mentioned contents. Whereas 5 respondents (12.5%) responded that they disagree of some of the contents provided above like, a list of qualified suppliers, a feedback mechanism for internal and external customer feedback and references or related materials including performance rating. Therefore we can understand that the organization’s quality plan consists of major contents that should be contained in the quality management plan.

4.6 quality assurance mechanisms

The table below discusses about the quality assurance mechanisms used by the organization. A total of four mechanisms were presented in the questionnaire and respondent’s response is presented accordingly. These items are identified based on the literature from other similar projects and understanding quality assurance in construction projects, the following table.

Table 4.12 Quality assurance mechanism

Quality assurance mechanism	No of response	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
keeping track of processes and progress	40				21(52.5)	19 (47.5)
confirm that everything is operating as it was agreed upon	40				26(65.0)	14(35.0)

measure how effective your pre-determined processes are	40		2(5.0)	9(22.5)	20(50.0)	9(22.5)
management of the quality of raw materials, assemblies and products	40		2(5.0)	5(12.5)	19(47.5)	14(35.0)

4.6 quality control mechanism

The table below discusses about the quality control mechanisms used by the organization. A total of three mechanisms were presented in the questionnaire and respondent's response is presented accordingly. These items are identified based on the literature from other similar projects and understanding quality control in construction projects, the following table summarizes the responses of the target respondents on factors included in quality control.

Table 4. 13 Quality control mechanisms

Quality control mechanism	No of response	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
set standard and monitor as per the standards	40		4(10.0)	7(17.5)	6(15.0)	23(57.5)
using graph or chart to study how processes are changing over time	40	3(7.5)	2(5.0)	7(17.5)	14(35.0)	14(35.0)
periodic checking before, during and on completion of process	40			5(12.5)	10(25.0)	25(62.5)

(Source: own survey, 2022)

4.7 Quality management implementation problems

This section of the study assesses the factors that influence quality management in Eagle hills Ethiopia surveyed based on the literature reviewed list of factors. The respondents were presented with eight variables on which are supposed to influence quality management to rank from ‘strongly agree’ (5) to ‘strongly disagree’ (1). The result of the responses is presented in the table below:

Table 4.14 Factors that affect quality management implementation

Quality management implementation problems	No of response	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
lack of management commitment and support	40	9(22.5)	6(15.0)	8(20.0)	13(32.5)	4(10.0)
project staff resistance to adopt quality systems	40	12(30.0)	7(17.5)		18(45.0)	3(7.5)
too much documentation	40		10(25.0)	14(35.0)	10(25.0)	6(15.0)
inadequate internal communication	40	12(30.0)	2(5.0)	4(10.0)	14(35.0)	8(20.0)
lack of proper training and education	40	3(7.5)	8(20.0)	10(25.0)	12(30.0)	7(17.5)
lack of skilled labor	40	6(15.0)	9(22.5)	4(10.0)	8(20.0)	13(32.5)
problems due to contractors performance	40	9(22.5)	14(35.0)	7(17.5)	4(10.0)	6(15.0)
problems due to consultants performance	40	3(7.5)	14(35.0)	11(27.5)	6(15.0)	6(15.0)

(Source: own survey, 2022)

4.8 Quality management tools and techniques applied

This section of the study assesses the quality management tools and techniques surveyed based on the literature reviewed list of factors. The respondents were presented with eight variables on which are supposed to influence quality management to rank from ‘strongly agree’ (5) to ‘strongly disagree (1). The result of the responses is presented in the table below:

Table 4.15 Quality management tools and techniques

Quality management tools and techniques applied	No of response	Strongly disagree	disagree	Neutral	Agree	Strongly agree
benefit/cost analysis	40		6(15.0)	4(10.0)	18(45.0)	12(30.0)
benchmarking	40	2(5.0)	2(5.0)	14(35.0)	17(42.5)	5(12.5)
flowcharting	40	3(7.5)	7(17.5)	4(10.0)	22(55.0)	4(10.0)
inspection	40	1(2.5)		5(12.5)	11(27.5)	23(57.5)
quality audits	40		1(2.5)	6(15.0)	16(40.0)	17(42.5)
control charts	40	2(5.0)	10(25.0)	4(10.0)	12(30.0)	12(30.0)
Pareto diagram	40	5(12.5)	19(47.5)	4(10.0)	10(25.0)	2(5.0)
scatter diagram	40	5(12.5)	20(50.0)	7(17.5)	7(17.5)	1(2.5)

(Source: own survey, 2022)

4.9 Analysis and discussion of data from interview

In light of the data obtained through the interviews the following major points of discussions have been identified and discussed as follows.

The interview was conducted face-to-face by asking questions with the selected interviewee. Semi-structured interview was conducted with the project manager of Elmi Olindo contractors' plc. to gather information on organization quality management practice, organizations quality problems, factors affecting the quality of construction projects and important for the quality of construction.

The interview questions were prepared to meet the objectives of the thesis. The first question is Do you have project quality management system in your organization? For this question the project manager replied that there is a quality management system which is the quality control/assurance system. The second question is how do you control the quality of material and work? The project manager replied by saying that they control by checking if the materials meet specification, by checking the drawing and the installation. The third question is Do you have training on project management especially on project quality management? And the reply was that there is no training provided by the organization in terms of both project and quality management. The fourth question was how do you see priority for project quality implementation and management? The project management replied by saying that there is high priority of project quality implementation and management in the organization. As the project manager stated that there is a high amount of top management support, communication and also commitment of project participants. The fifth question was what are the challenges you face in project quality implementation and management in your organization? The project manager

replied lack of skilled labors is the main challenge the organization is facing. The last question is what do you think must be fulfilled for successful project quality implementation and management in general? The project manager replied by saying team dedication, skilled man power and follow up is what must be fulfilled for successful project quality implementation.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

Summary

Construction projects are a balance between cost, time and quality. When it comes to determining the quality of a construction project, there are typically a number of factors to consider. Among this is whether you have completed the project on schedule, meeting the owner's requirements within the agreed upon budget. Additionally, whether you have fulfilled the specifications laid out in the job's contract is a key to determining construction quality.

Quality in construction industry can be defined as the attainment of acceptable levels of performance from construction activities. This performance would be attained when the activity meets or exceeds the requirement of the client or the owner (Gopal Mishra, 2012)

The following conclusion, which is made from the research findings, could help to give insight to Eagle hills Ethiopia Construction Company in relation to the management's responsibility in implementing and practicing QMS.

The conclusions made from the findings are presented below:

- According to the findings (70.0%) the organization gives high priority to meeting health and safety standards as well as meeting quality.
- The company's perception of quality is a competitive advantage and 92.5% agreed that the organization implements quality management system.

- Lack of management support (32.5%), project staff resistance to adopt quality systems (45.0%), inadequate internal communication (35.0%), lack of proper training and education (30.0%), lack of skilled labor (32.5%) were the major factors that affect quality implementation.
- Quality control and assurance mechanism are used in the organization to control quality. We can conclude that the organization gives a high priority in implementing, controlling and assuring quality which is what this study has been aiming for. The organization also has a definite quality plan consisting of many contents that are important for the success of the project. The project team also has enough knowledge regarding quality management practices. The study has also concluded that there is lack of top management support regarding quality management implementation. The other thing the organization didn't give much concern to is meeting project budget and meeting project time

5.2 Recommendations

Based on the findings of study it is recommended that Eagle hills Ethiopia considers the following areas of improvement in management of its projects in general and quality management in particular.

- The company should give high emphasis to factors such as meeting project budget and meeting project time as these two factors are main factors other than meeting quality in a construction project.
- The company should also give proper training and education for the employees so that the employees will be more aware of project quality and about project quality management systems. It will also decrease resistance of employees against implementing

quality management systems. The company should also improve the way of communication.

- The top management should also be supportive in implementing quality management systems.
- Quality management of construction projects require stakeholders collaboration from clients, contractors, consultant sides on the basis on their respective roles and responsibilities defined. Therefore, the organization should strongly work on to build partnership/collaboration with its stakeholders.
- Most of the employees at Eagle hills Ethiopia are first level degree. So the organization should update their skills.

5.2 Future studies

Future researches should be conducted in detail incorporating various project based organizations to compare their quality management practice and contribute to growth of the discipline. As the context of this research aimed at the building construction sector future studies could be conducted on different schemes of construction as road, bridge or water works construction. Another shift in context could be to change the location of the study and compare quality management practices of building constructions in Addis Ababa with other cities in Ethiopia.

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Appendix A
Questionnaire

St. Mary's university

Department of project management

Assessment of quality management practices in La Gare mixed use development project

Dear Respondent, I am kindly requesting your willingness to participate in this research “Assessment of Project Quality Management Practices in La Gare Mixed Use Development Project”

The questionnaire is designed for partial fulfillment of MA in project management. Please answer the question as objectively and honestly as possible and according to the instruction contained in body of the questionnaire. I want to assure you that all information provided in this survey will be treated with strict confidentiality and allowed to serve for the purpose of the research under consideration. Thank you in advance for your cooperation!

Contact Address Mahlet Mulugeta E-mail: mahimule1919@gmail.com Phone No: 0922860534

Part I: This section contains background information of the respondents

1. Gender

Male

Female

2. What is your position in the organization?

Contractors

Consultant

Project owners

3. What is your highest level of education?

Post graduate

Undergraduate

Diploma

Certificate

Any other (please 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 & above
5. Priorities given to factors in the company

Please put a tick mark '√' in the column according to the priority

Factors	Degree of priority		
	low	moderate	high
Meeting project cost budget			
Meeting project time			
Meeting health and safety standard			
Meeting quality standard			

Part II: This section contains basic information regarding quality and quality management

Please put a tick mark '√' on the one that represent your belief most appropriately

6. From your point of view, which one of the following words can define quality?

Meeting customer requirements Meeting customer expectation

Conformation to specification

7. What is your organization's perception of quality?

A competitive advantage Elimination of defects

Others (please specify).....

8. Does your organization implements quality management system/processes?

No (please go to next section of question)

1) Such a plan is under consideration

2) A quality improvement program has been implemented recently

9. If your answer is yes, what type of quality management system is mostly practiced in your organization?

- | | | | |
|---------------------------------------|--------------------------|-----------------------------|--------------------------|
| 1) ISO 9001 | <input type="checkbox"/> | 2) Total quality management | <input type="checkbox"/> |
| 3) Quality control/ Quality assurance | <input type="checkbox"/> | 4) Quality improvement | <input type="checkbox"/> |
| 5) Others (please specify) | <input type="checkbox"/> | | |

10. What is the major objective of quality management system practiced in your organization?

- | | | | |
|---|--------------------------|---------------------------------|--------------------------|
| 1) Increase productivity | <input type="checkbox"/> | 3) To meet customer expectation | <input type="checkbox"/> |
| 2) Compliance with environment and safety requirement | <input type="checkbox"/> | | |

Part III This section covers questions related to the main problems facing the quality in construction industry

The scale rating description: 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, 5= strongly agree

Project quality planning

Does your quality plan contain the following?

Project quality planning contents 1 2 3 4 5

Brief description of the project

Project quality objectives

Roles and responsibilities of project staff

Methods to check compliance, inspection, tests, audits etc...

Organizational objectives to be attained

Applicable operating practice, procedures, work instructions

A list of qualified suppliers

Performance standards and how performance will be documented

A feedback mechanism for internal and external customer feedback

References or related materials including performance rating

How important do you think the quality management plan is to your construction projects?

Very low low Moderate High Very high

Quality assurance

Do you consider the following factors in your quality assurance mechanism?

Mechanisms 1 2 3 4 5

Keeping track of processes and progress

Confirm that everything is operating as it was agreed upon during the quality planning stage

Measure how effective your pre-determined processes are and confirm that all compliance needs are being met

Management of the quality of raw materials, assemblies, products and components

Quality control

Do you consider the following factors in your quality control mechanism?

Mechanisms 1 2 3 4 5

Set standards and monitor/adjust as per the standards

Using a graph or chart to study how processes are changing over time

Periodic checking before, during and on completion of the process

Quality management implementation problems

List of Quality management implementation problems 1 2 3 4 5

Lack of management commitment and support

Project staff resistance to adopt quality systems

Too much documentation

Inadequate internal communication
 Lack of proper training and education
 Lack of skilled labor
 Problems due to contractors performance
 Problems due to consultants performance

Quality management tools and techniques applied

The organization applied	1	2	3	4	5
Benefit/ cost analysis					
benchmarking					
Flow charting					
Inspection					
Quality audits					
Control chart					
Pareto diagram					
Scatter diagram					
Six sigma					
Any other please mention					

Source (own developed)

Appendix B

Interview

- 1) Would you tell me your current 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) How do you control the quality of material and work?
- 5) Do you have training on project management? Especially on project quality management?
- 6) How do you see management commitment and priority for project Quality implementation and management?
- 7) What are the challenges you face in project quality implementation and management in your primary hospital construction?
- 8) What do you think must be fulfilled for successful project quality implementation and management in general?

Appendix C

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Reliability Statistics

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