ST. MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTMENT OF PROJECT MANAGEMENT

Assessment of Quality Management System Practice in Addis Ababa: The case of NOAH Real state

BY

FETALEW ASNAKEW ADANE

JUNE 2024
ADDIS ABABA, ETHIOPIA

Assessment of Quality Management System Practice in Addis Ababa: The case of NOAH Real state

BY

FETALEW ASNAKEW ADANE

A RESEARCH PROJECT TO ST MARY UNIVERSITY SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFULMENT OF THE REQIREMENT FOR THE AWARD OF MASTER OF ARTS IN PROJECT MANAGEMENT

ADVISOR ABEBAW KASSAI (Ph.D.)

JUNE 2024
ADDIS ABABA, ETHIOPIA

ST. MARY'S UNIVERSITY

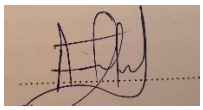
SCHOOL OF GRADUATE STUDIES

Assessment of Quality Management System Practice in Addis Ababa: The case of NOAH Real state

BY

FETALEW ASNAKEW ADANE

APPROVED BY THE BOARD OF EXAMINERS

_____	_____	_____
Dean	Graduate Studies	Signature
Abebaw Gualu (Ph.D)		11/07/2024
Advisor	Signature	Date
_____	_____	_____
External Examiner	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date

Declaration

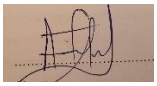
I, Fetalew Asnakew hereby declare that the thesis entitled “assessment of quality management system in real estate construction in Addis Ababa: the case of NOAH Real Estate” is my original work, prepared under the guidance of my Advisor ABEBAW KASSAI (Ph.D.).All important sources of materials used for the preparation of this 'thesis' ,Furthermore, I want to confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

Fetalew Asnakew _____

St. Mary's University, Addis Abeba, Ethiopia June 2024 Signature

ENDORSEMENT

This thesis has been submitted to St. Mary‘s University, School of Graduate Studies for examination with my approval as a university advisor.



Abebaw Gualu (Ph.D)

Name of Advisor Signature

St. Mary's University, Addis Abeba, June 2024

Acknowledgements

Praise and appreciation be to GOD, the Almighty, for his abundant blessings. I wish to convey my heartfelt appreciation to Abebaw Kassie Gualu (PhD), my research advisor. He has provided me with great insightful remarks and recommendations. I truly appreciate his patience. His dynamism, vision, genuineness, and motivation have all left an indelible impression on me. Working and studying under his direction was a wonderful honor and pleasure. I am grateful with the wide-ranging support from the NOAH REAL ESTATE. My family and friends deserve a huge gratitude for their love, prayers, care, and support. To all the above, I express my deep appreciation and God Bless you all.

TABLE OF CONTENT

Contents

List of Tables

List of Figures

List of Abbreviations

EQA: Ethiopian Quality Award

ISO: International Organization for Standardization

PM: Project management

QP: Quality Planning

QC: Quality Control

QA: Quality Assurance

QIP: Quality Improvement program

QMP: Quality Management Practice

QMS: Quality Management System

QS: Quality System

CQI: Continuous Quality Improvement

PMI: Project Management institute

RII: Relative Important Index

TQM: Total Quality Manag

Abstract

This study aims to assess the practice and implementation of quality management system at NOAH real estate projects, which are among a very few construction company certified for ISO-9001-2000 Quality management system. Data were gathered from concerned staff members and subject matter experts in the project environment utilizing both quantitative and qualitative methodologies in order to meet the research's objectives. Forty (40) questionnaires were sent, and a 100% response rate was obtained. The data were gathered and analyzed using descriptive statistics, with an emphasis on the mean, standard deviation, and percentages. These calculations were made using Excel and the statistical program for the social sciences (SPSS) version 20.

Different literatures were assessed to show the concept of quality and quality management in the construction industry and the factors that affect quality management system practices. Those issues were also assessed in NOAH real estate situation by using interview and questionnaire. The interview was conducted with different professionals in order to help the questionnaire design.

In order to summarize the results, conclusions, and suggestions, content analysis of the qualitative data was carried out and triangulated with the quantitative data. The results were presented in a qualitative and quantitative format. The study's conclusions indicate that while the majority of respondents were aware of the concepts of quality and quality management, their application was comparatively low. The study also revealed that the contractors' and consultants' performance was found to be subpar, and there was a lack of ongoing QMS training or target dates for their provision. On the other hand, the management's obligation to comprehend client needs, ensure top management commitment, and optimize project resources is handled well. Therefore, it is advised that in order for a quality management system to be effectively used and implemented, there should be increased training in quality assurance, a separate quality management policy to handle the entire project quality management process, a documented quality plan, and the implementation of the appropriate project management methodology within the system.

Key words: quality Management, gift real estate, Project Management, NOAH real estate Construction Project.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The triple restriction should constantly be on your mind when managing a project. However Project quality management is a fourth issue that is as crucial but is occasionally overlooked by certain project managers during the project planning stage. Building construction is regarded as a fundamental industry on which a nation's growth depends globally. The procedures used in constructing projects determine the quality of international businesses. It is said that throughout the previous three decades, the majority of construction enterprises around the world have encountered several difficulties and issues, including workmanship flaws, delays, and cost overruns. The culture of total quality management has enhanced productivity of firms around the world. Global international, regional and local firms always strive to gain competitive edge in building projects based on QMS initiatives that are customer centric in nature. (Lawrence Muhwezi, Baguma Andrew,Joel Mubiru, 2021)

Project Quality Management includes the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements in order to meet stakeholders' objectives. Project Quality Management also supports continuous process improvement activities as undertaken on behalf of the performing organization. For the implementation of quality management in construction projects, the concepts of quality planning (identification of quality standards), quality assurance (evaluation of overall project performance) and quality control (monitoring of specific project results) in the product quality management processes were defined by Project Management Institute (2000).

A construction project according to (D.Ashokkumar, 2014) goes through different phases such as Conceptual planning, feasibility study, design, procurement, construction, acceptance, operation, And maintenance in its life span; and one of the important factors that determines the success of Construction projects is quality. The effective management of construction project in all phases of its life cycle is linked to quality. (Tan Chin Keng, 2011) Opined from the perspective of a

construction firm that following the specified standard and maintaining the quality of construction competitiveness and enduring business growth is referred to as “Quality Management in construction projects.

Quality management in construction is a distinct feature that needs to be given utmost seriousness in any construction work. It is a holistic approach to managing a project, and ensures effort to achieve and improve on the required standard for a project which is well planned and organized, so as to obtain customer’s satisfaction, provides value for money, and fit for purpose.

In Africa, pointed out that the collapse of buildings in Africa has been attributed to weak foundations, substandard construction materials, poor material mixing by construction workers, excessive load on strength of buildings and poor testing of building strength. Many construction industries have criticized especially in terms of productivity and quality system because implementing managers mainly focus on the cost and time instead of quality for construction projects. Collapsed buildings are a growing problem where many buildings in the region’s major cities are under construction or renovation. Research indicates that Kenya has probably suffered the most building collapses in the last decade due to lack of quality and poor construction materials. (Lawrence Muhwezi, Baguma Andrew,Joel Mubiru, 2021).

works for the accomplishment of client’s satisfaction resulting in the firm’s long-term In order to attain quality in the final project, all actions including integrating all processes, methods, structures, and products fall within the purview of quality management, according to (Mohammed Resan Kareem,and Gozde Ulutagay, 2022). According to the Council of Registered Builders of Nigeria (Ogunbiyi, 2014), quality is the most important aspect in determining whether a construction project is successful or unsuccessful. Quality also gives a quantifiable metric for gauging how satisfactorily participants' expectations have been met. (Agbenyega, 2014) Describes quality as a standardization effort, but Bala, Keftin, and Adamu (2012) see quality management as an extensive failure prevention program. Each project must use quality management practices throughout the whole project lifecycle to achieve the desired degree of quality as intended.

Although the contractors working on building projects in Ethiopia understand the concept of quality and quality management, their adoption of it is only slightly more than 50%. Instead of concentrating on quality, the contractor's main interests are doing the task swiftly and financially. In their business, 40% of contractors don't have a quality management system. The study's analysis indicates that contractors who use quality management systems, such as ISO 9001 and quality

control/quality assurance, have a better understanding of and commitment to quality than contractors who do not. The contractors that use quality management systems also have their own QMS objectives, which help them achieve quality and other related objectives like financial and bidding success. (Azeb, 2021)

1.2 Statement of the problem

Quality assurance (planning to satisfy quality requirements) and quality control are both parts of project quality management (steps taken to control results to see if they conform to requirements). The degree of compliance of the final delivery to the client's criteria is referred to as quality. One common reason projects fail is because quality is sacrificed in order to meet a short deadline. It is very helpful to finish a job on schedule just to find out that the supplied item won't function as intended (PMI, 2008)

According to the research in Ethiopia's socioeconomic growth is significantly influenced by the building sector. Yet, as stated by (Tsigereda Garomsa,Elmer De Castro Agon,Sintayehu Assefa, 2019), the sector is still plagued by delays, cost overruns, and subpar workmanship, and the present management style in Ethiopian building construction projects is more traditional. For a long time, Ethiopia's building sector has struggled with difficulties related to quality. There is a lot of mismanagement in Ethiopian construction enterprises, which causes consumers to become dissatisfied since the project delivery is delayed. This could be the outcome of extremely disgruntled workers brought on by late payments, misunderstandings, and other issues. The top management is watching the impact as customers choose to do business with another company as a result of the badly managed building projects. This will eventually result in the decrease in firm performance. (Azeb, 2021)

(Birhanu, B.& Daniel K., 2013), He identified achieving project quality hinges on various factors, including effective supervision, communication, management of commitment, availability of appropriate tools and materials, involvement of a quality assurance team in the process, staff turnover, skilled turnover, ineffective resource management, and contractor-related issues. This study highlights that in the real estate industry, there is a significant lack of attention to these critical aspects, leading to ongoing problems with housing construction quality. Experts in the field suggest that these issues can be attributed to a deficiency in diligence and a suboptimal

commitment to quality by contractors. Consequently, real estate construction companies in the country have long struggled with quality concerns, resulting in substantial resource wastage due to flawed construction practices.

This study on building construction firms may be used to gauge their level of QMS adoption, spot any gaps, and determine what they need to accomplish going forward. Most construction companies only focus on the cost, time, and completion of the work. This research would have been conducted and shown the existing gaps, the problem in the area would have been left unanswered for a while, and it would have been able to determine the main reason why their implementation of the QMS was ineffective. The study's conclusions should also instruct them and provide clear guidance on how to apply the adopted QMS to all of their operations.

Construction projects squander a great deal of time, money, and resources due to ineffective or nonexistent quality management methods. Furthermore, non-conformance to specified standards indicates a lack of quality resulting from inadequate construction quality management (Yimam, 2011). Based on the anticipated operating life of the completed project, quality-related issues can be predicted during the construction phase. Non-conformance can result in penalties and time-consuming rework for a contractor, which can reduce output.

Therefore, based on what has been done in different contexts, and practical problems observed in the building construction projects indicated above, the previous studies have limitations, including the absence of specific data to quantify issues in the Ethiopian construction sector. a lack of comprehensive citations, and a tendency to present a predominantly negative perspective without counterarguments or positive developments. Additionally, it lacks details on the research's scope and methodology and provides no practical solutions or recommendations for addressing quality management issues in the construction industry.

These limitations impact the overall comprehensiveness, credibility, and balance of the information presented, and they should be taken into account when evaluating the text's insights and conclusions.

This study aims to assess project quality management practices, and quality management implementation problems with a special focus on building construction projects in Noah real estate, Addis Ababa.

1.3 Research Questions

The specific questions to the study include the main research questions this study ask are the following:

- What is the current practice of quality management System in building construction projects?
- Are there any elements that the quality management system in building construction is up against?
- What are the primary goals of practicing a quality management system?

1.4 Objectives of the study

The following are the objectives of the study.

1.4.1 General objectives

To study quality management system practice of Building construction projects in NOAH real state.

1.4.2 Specific Objectives

1. To identify the current practice of quality management systems in NOAH real state Building construction including quality planning, quality assurance, quality control and quality improvement practices.
2. To determine the challenges to the use of quality management systems in the building construction sectors.
3. To identify Project quality Management System factors that uses for quality management system in the building construction sector.

1.5. Significance of the study

Construction industry quality management system deployment is crucial for economic growth and business competitiveness to improve performance both domestically and internationally. Hence,

by adding fresh information in an Ethiopian setting, the study adds to the body of knowledge about building construction projects and will aid in the development of QMS disciples.

The study's findings are pertinent information that Noah's management can use to determine the current strengths and weaknesses in quality management and the essential elements that make construction projects successful in order to apply to the ongoing projects in Addis Abeba. Also, other projects might make use of the study's findings to resolve quality-related issues in building projects. In order to improve quality management system implementation in the building construction industry, the study also provides crucial information to project designers, contractors, and building construction sectors about the obstacles to successful QMS implementation as well as the key success factors of QMS in road construction.

Additionally, the study will assist managers in better comprehending the strong relationship between the implementation of an effective quality management system and organizational performance, enabling them to make the best decisions possible regarding the creation and implementation of a quality management system.

The study could help the local building industries improve the caliber of their work. Also, the study will serve as a guide for future research on other projects that are connected to it and that aim to solve quality issues through effective project implementation and management at the local, state, and federal levels.

1.6. Scope of the study

The research was only able to assess the project quality management practices of NOAH real state building Construction Company in the Addis Abeba city due to time and financial limitations. We didn't take into account any other building firms. This study outlined the project quality management culture at those private construction company in detail and listed potential issues related to it along with potential solutions.

The study's goal was to evaluate the quality management procedures used in NOAH building construction project, which was exclusively limited to Addis Abeba.

In this research, the respondents are primarily limited to NOAH Real estate Construction Company in Addis Ababa. The choice of this specific company as the respondent is due to practical

constraints, including time and financial limitations, which restricted the ability to assess multiple building firms comprehensively.

The study primarily focuses on project quality management practices within NOAH real state Building Construction Company, including quality planning, assurance, control, and improvement. This emphasis is to gain a thorough understanding of the company's quality management culture. The study is limited to Addis Ababa due to its significance in construction activities, ensuring a practical and representative sample within the city.

1.7 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, significance and scope and limitations of the research.
2. Chapter two: Literature review: In this chapter, ideas and terminology are carefully examined in order to determine the primary influences on quality and the quality management system in building construction projects.
3. The third chapter, "Research Methodology," describes the approach taken in this study to reach the specified goals and respond to 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

REVIEW OF RELATED LITERATURE

2.1 Theoretical Literature

2.1.1 Quality management

Quality is technically defined by the international organization for standardization (ISO DIS 9000.2000) as the extent to which a collection of inherent qualities satisfies the criterion.

According to Armand V. Feigenbaum, quality is the combination of marketing, engineering, manufacturing, and maintenance aspects of a product or service that meets or exceeds the needs and expectations of the consumer (Aole, 2013). Also, according to Ishikawa, quality is the design, development, manufacture, and servicing of a product that is more practical and affordable and often satisfies consumer needs (Greg, 2004). Taguchi, who emphasizes an engineering quality approach, defines quality as how a product impacts society after it has been sold, such as when it doesn't match the customer's needs (Aole, 2013).

Quality in construction industry is the performance of project duties in the delivery of products and services in a way that achieves the listed requirements and expectations of the client, design professional team and project constructor. Their duties and responsibilities according to the missions that players are expected to fulfill the completion of project overall activities identified by contractual agreement as well as applicable legislation and licensing requirements, codes, prevailing industry standards 15 and regulatory framework guidelines. However, quality in construction is more difficult to explain. Firstly, the product is not a mechanical unit but a piece of work with specific characters. An example would be a building has different components that make up the whole body. Each of these components has a specific character and quality is viewed in terms of the procedures and materials that are used to achieve it. In other aspect the construction cost and time delivery will depend on how well the designing of the building and the required detailed specification and end results. The quality of the finished works will be controlled by ways of inspecting and testing as construction process. For example the quality of the concrete used in the site are first inspected and tested before it can be used. And after the concrete that already passed sample test will ultimately be tested again to check whether it attained the required strength. Due to poor workmanship and not following the specified steps it can pass the quality test and yet

still not attain the desired end result. The importance of implementing quality assurance and control can't be stressed enough, because the errors that occur in construction can't be reversed and will cost a lot of money. It is up to the management to employ quality assurance and control and diligently oversee it.

According to (David Arditi,Hüsnü Murat Günaydın, 1997), quality in the construction sector is defined as complying with the demands of the owner, the designer, the builder, and any applicable regulatory bodies. These qualities can be used to describe quality:

- Fulfilling the owner's criteria for functional sufficiency, on-time and within-budget completion, life cycle expenses, and operation and maintenance.
- Fulfilling the demands of consumer safety and health, environmental concerns, and public property preservation.
- Complying with the constructor's criteria for providing contract plans in detail so that the constructor may put together a price proposal or competitive bid; prompt choices by the owner and design expert.
- Fulfilling the needs of the design professional in terms of providing a clearly defined scope of work; allocating funds to assemble and employ a trained
- Meeting the needs of the design professional about the supply of a clearly defined scope of work; budget to assemble and employ a competent and necessary work within a sufficient time allowance.

Several writers defined quality as the outcome of a continuing process of improvement including services, products, procedures, and people in order to satisfy consumer expectations. The act of monitoring various organizational operations and tasks to ensure that goods and services are available and that the methods used to provide them are consistent is known as quality management. Crawford claims that the main goals of quality management are to please the client, adhere to specifications, guarantee fitness for purpose, and ensure the product is fit for use. A project model focuses on quality management from the perspective of the products, processes, and the people required to make quality as successful project completion with an effective and efficient aspect and views it as a collection of activities or tasks that are necessary to ensure the project satisfies all the needs for which it was undertaken based on documentation in the state of work (Crawford, 2002)

Quality management is described in the dictionary of the American society of quality (ASQ) as "the use of quality management in managing a process to achieve maximum customer satisfaction at the lowest overall cost to the business while continuing to improve the process" (2). In the project management body of knowledge guide, quality management is one of the knowledge areas (3). "All procedures and actions of the performing organization that set quality policies, objectives, and responsibilities so that the project will fulfill the needs for which it was undertaken" are included in this.

The primary objective of the construction management is to balance the three legged stool; time, budget and quality constraints and the safety and health issue as well. Quality is not only impacts to aesthetics, appearance and durability but also it impacts performance. Poor performance can lead to failure of everything (Kidanu, 2014). Quality management is a way of to improve the effectiveness, flexibility and competitiveness of the whole business. In construction the problem of quality and its value of importance to the construction industry has been an area of great concern and debate for many years. The lack of care and poor attitude towards quality on behalf of the contractor is leading to snagging problems (Marasini & Quinnell, 2010).

2.1.2 Project Quality Performance

Measurement Performance measurement is a fundamental of quality management and a total quality organization. Performance measurement can be defined as the process of quantifying the efficiency and/or effectiveness of an activity (Andy Neely, et al, 1995). Traditionally, quality based measures of performance have focused on the issues of such as the number of defects produced and the cost of quality (Andy Neely, et al, 1995). In a successful total quality organization, performance can be measured by the improvements seen by the customer as well as by the results delivered to the shareholders. Performance can be measured in terms of financial and non-financial terms, or a combination of both (Agbenyega, 2014).

2.1.3 Quality Assurance Quality assurance (QA)

Is the planned and systematic activities implemented within quality system and demonstrated, as needed, to provide adequate confidence that an entity will fulfill requirements for quality. The primary function of quality assurance is to be obtained for completed construction that meets all contractual requirements. Assurance is a degree of certainty and quality assurance personnel

continually to assure or make certain that the contractor's work complies with contract requirements (D.Ashokkumar, 2014). Thus, QA activities do not control quality they establish the means for ensuring quality output. QA has to be built in to the process: this includes creating records, documenting plans, documenting specifications and reporting reviews. Such documents and activities also serve to control quality and assure it as well .In QA there can be used both second and third party audits to assess the efficiency of the system. The main figures of the stage are the use quality manuals, procedures, work instructions, quality planning quality audits, etc. (Birhanu, B.& Daniel K., 2013) .

2.1.4 Quality Control

Monitoring specific project result to determine if they comply with relevant quality standards and identifying ways to eliminate cause of unsatisfactory performance contract documents comprise a clear, complete, and accurate description of the facility to be constructed, correctly convey the intent of the client regarding the characteristics of the facility needs to serve his/her purposes (D.Ashokkumar, 2014). Both American National Standards Institute (ANSI) and ISO define quality control as the operational techniques and activities: for example, providing a means to control and measure the characteristics of material, structures, components, or system which are used to fulfill the quality requirement. QC prevents undesirable deviations between the planned quality and the product being supplied. Deming W.E derives quality control in to four activities.

- Plan (establish goals, standardize working procedures and train employees)
- Do (Carryout the work according to plan i.e. implement the process)
- Check (verify compliance with plans)
- Act (in case of noncompliance, finding and removing its root causes)

2.1.5 Project Quality management

"Project Quality Management encompasses the procedures and actions of the performing organization that set quality policies, objectives, and responsibilities so that the project will fulfill the purposes for which it was undertaken," according to the PMBOK Handbook. It carries out continual process improvement actions as necessary during the quality management system's implementation (PMBOK, 2008:189).

The necessity to develop a QMS is driven by the complexity of construction and client standards requirements. Reduced quality expenses, improved customer happiness and recognition, worker safety, proper execution of work quality from start to end, and increased employee job satisfaction are some benefits of employing quality management. In order to reach participant objectives, PQM entails methods that combine organizational quality mindset with management and planning of project and product quality requirements. Customer satisfaction is attained through PQM, which places a strong focus on process creation, client and provider meetings, collaboration, and instruction. Quality management contains all activities of the management tasks that define the quality rule, aims, duties and tools with resources such as quality scheduling, quality device, quality guarantee, and quality perfection, within the quality organism. Construction product quality can be defined as the grade to which the specified or indirect requirements and the internal features are assured during construction. Construction companies use multiple quality management systems such as QMS, JIT, and LSS, among many others for waste reduction and quality improvement, by eliminating defects in production (Amir Faraji et al, 2022).

2.1.6 Quality Management System

Quality management system is referred to as "all activities of the overall management function that determine the quality policy, objectives, and responsibilities, and implement them through methods like quality planning, quality control, quality assurance, and quality improvement within the quality system," according to Hakim et al. (2006). The creation and execution of construction projects, in particular, need the full cooperation and commitment of senior management to assure the QMS's ongoing improvement. As a result, quality management needs to be done in a way that is clearly defined, thoroughly documented, and effectively planned, implemented, and controlled. To construct project level quality processes, a project quality plan (PQP) is created by fusing the project information with the businesses' rules, procedures, and inspection practices (Griffith & Watson, 2004). This idea revolves on the necessity for quality systems to work together around the requirements of the project activities in both a practical and theoretical sense.

Regardless of what the user organization does, its size, or whether it is in the private or public sector, ISO 9001:2015 is the standard that offers a set of defined standards for a quality management system. Although certification is not a prerequisite for the standard, it is the only one in the family that businesses may be certified against. An organization is in danger if its clients are

not happy. To keep customers satisfied, the organization needs to meet their requirements. The ISO 9001:2015 standard provides a tried and tested framework for taking a systematic approach to managing the organization's processes so that they consistently turn out product that satisfies customers' expectations. The international standard for quality management (ISO 9001,Quality management systems , 2015) adopts a number of management principles that can be used by top management to guide their organizations towards improved performance such as: customer focus, leadership, engagement of people, process approach, improvement, and evidence based decision making and relationship management. Since any construction firm and its suppliers are mutually supporting, therefore a mutually beneficial relationship between them increases the ability of both to add value and these seven principles form the basis for the quality management system standard (ISO 9001,Quality management systems , 2015).

The worldwide body for standards welcomed Ethiopia as its 68th member (ISO). Ethiopian Standards Institute was founded in 1972 after the necessity for quality control was realized in Ethiopia. Beginning in the 1940s, as agricultural product exports started to increase, the Ethiopian government began to prioritize quality as a development component (Birhanu, B.& Daniel K., 2013). QMS certification was a very expensive and tedious process for Ethiopian industries, because there were no system certified organizations which can certify local companies. In February 2009, quality and standard authority of Ethiopia (now called Ethiopian Conformity Assessment Enterprise) obtained system certification and localized the processes. Now the Ethiopian Conformity Assessment Enterprise is giving internationally accepted certificate to not only Ethiopian construction companies but also for any other companies. Ethiopian Quality Standard Agency is also giving training and technical support on QMS (Birhanu, B.& Daniel K., 2013). Through analyses of the Ethiopian Quality Award (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 (Beshah & Kitaw, 2014).

2.1.7 Construction project Quality Management

The definition of construction project quality management is the accomplishment of the owner's needs per the stated scope of work within the allocated budget and time frame in order to meet the expectations of the owner or user. The construction project trio might be the phenomena of these

three factors (Scope, Money, and Time) (Rumane, 2011). Construction projects are customer-focused and custom-designed, with particular needs established by the client to be finished within a given time frame and allocated budget. Each project features components that are distinctive, thus no two projects are same. Always, the project's owner accepts that it must be superior and distinctive. Each project must be planned and executed in part to fulfill a specific requirement. Projects in the construction industry are more specialized than those in a regular and repeated industry (Rumane, 2011).

The quality of building projects affects how the construction sector develops. One of the key elements in the success of building projects is quality. Construction project quality improvement and quality management are related throughout the project life cycle. While quality control is crucial throughout the whole project life cycle, it has the greatest impact on the ultimate quality of construction projects during the execution (construction) stage. (D.Ashokkumar, 2014)

2.1.8 Barrier of Quality Management in Construction Industry

Companies are always working to increase the quality of their entire operations in order to better serve the market (Dahiya and Bhatia, 2013), however there are still issues that prevent quality management from serving its intended purpose. An examination and assessment of the current organizational culture and management style emerged as a very essential component that should be taken into consideration in every business in order to apply the TQM efficiently. The organizational culture is how a company's employee's act when a new management system is implemented (Shegaw, 2019).

Furthermore, according to Dahiya and Bhatia (2013), the absence of a true organizational culture increases the risk of resistance to change since the company will not accept any methods that alter its current way of functioning. According to Dahiya and Bhatia (2013), it is essential that all information flow through the organization at the proper time and in the appropriate way. However, the communication channel's flaws function as a barrier to producing high-quality output. Similar to Shegaw (2019), Fuentes et al. (2000) stated that a hurdle to implementing QMS in Spanish firms is the absence of information and communication channels where this crucial information may flow. Employees are intimately tied to the manufacturing process, claim Dahiya and Bhatia (2013), a lack of commitment on their part can render the whole process of quality management useless.

In order to retain and inspire the workforce, particularly in occupations with intense competition, incentives are a critical component of the cycle that top management must follow. Other challenges to implementing QMS in many organizations include inconsistent reward structures and a lack of recognition, which make it more difficult to integrate the new managerial strategy and its associated quality practices (Soares & Lucas 1996; Ngai & Cheng 1997 cited in Shegaw, 2019).

2.1.9 Basic Quality management tools and techniques

The tools and techniques most commonly used in Quality management and process improvement are:

- Control Charts
- Histogram
- Pareto Charts
- Flow chart

Histogram

Bar charts that show the distribution of variables across time are known as histograms. This displays the distribution as a mean. Depending on the distribution's state, this graph may take on many forms. A histogram may be used to measure anything against time, where time is measured on the y-axis and a variable is shown on the x-axis.

Think about this illustration: The following histogram displays the amount of hits the company's website received throughout various hours of the day. The number of users or customers who are actively using the website is shown on the x-axis, while the time of day is shown on the y-axis.

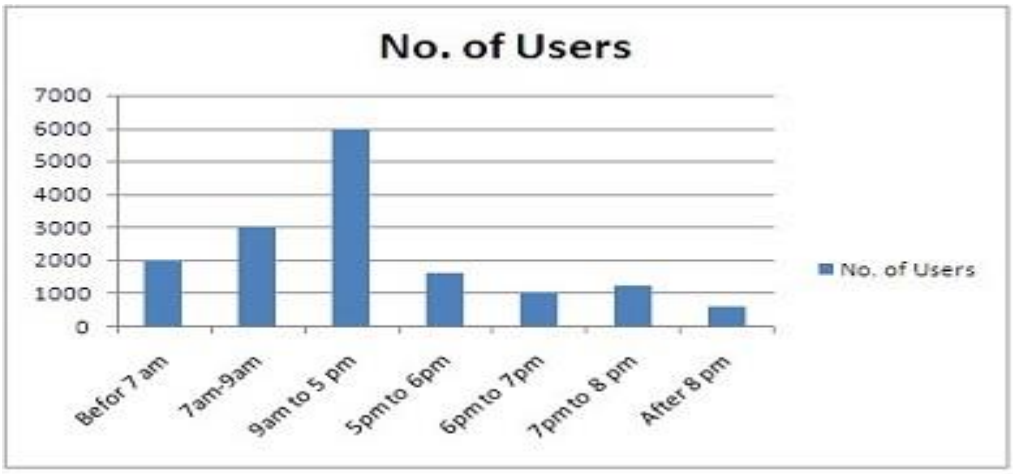


Figure 2-1 Histogram

Control Charts

Control charts represent the results of processes as a graph after tracking their progress through time. Control charts can be used to assess if process deviations are under or above control. The mean and standard deviation are calculated from the samples that were selected and tested in order to create a control chart.

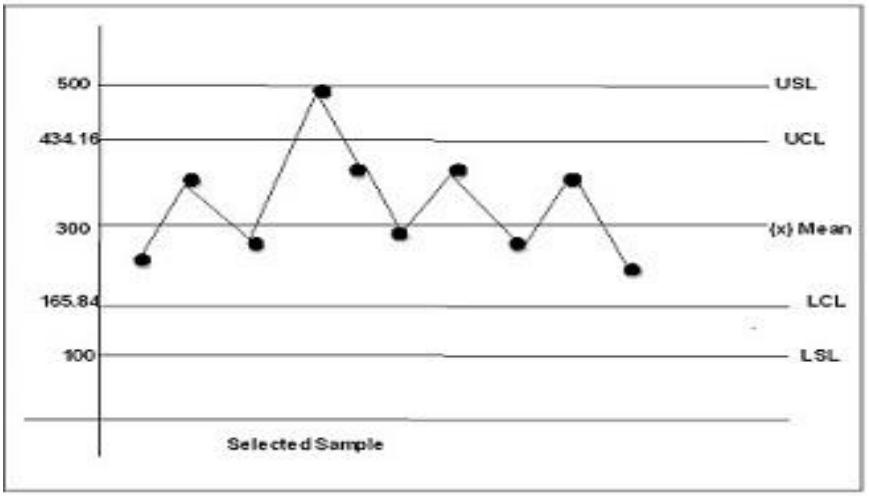


Figure 2-2 Control chart

Pareto chart

According to Pareto, 20% of causes account for 80% of problems. The 80/20 rule is applicable in a wide range of fields and disciplines, as others have demonstrated over time. Therefore, identifying and concentrating on the category of problems that accounts for the most amount was a smart idea. It is a specific kind of vertical bar chart that is employed to pinpoint the problem's first main causes. The total number of flaws are plotted against the causes of those problems in the figure below. According to their frequency and defect rate, the issues are ranked in order. You may more easily determine the key areas for remedial action by following this sequence.

When to use this method?

To analyze the risk in the task process.

Focus on a critical point when many are there.

Visual explanation and for easy communication delivery.

Focus on a particular element in a cluster of data.

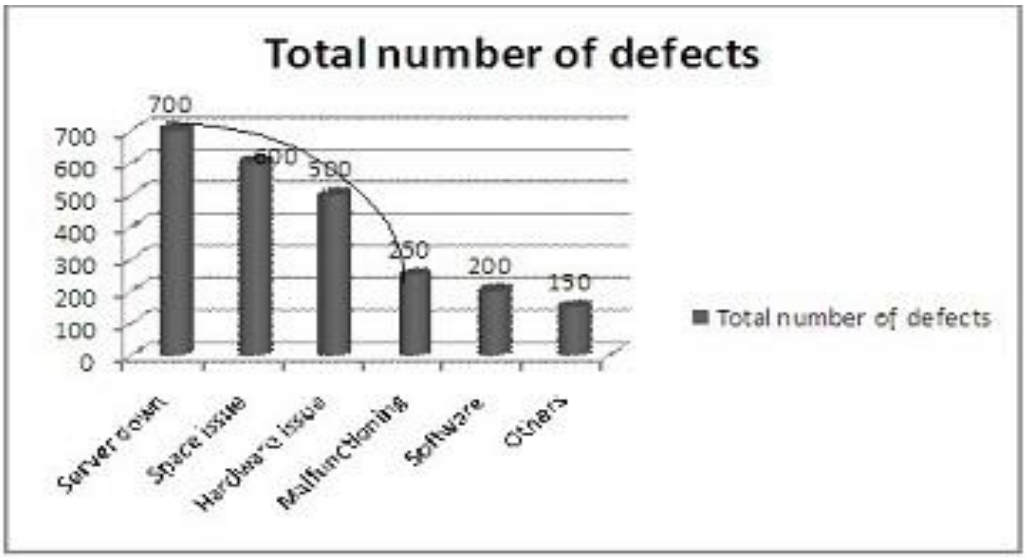


Figure 2-3 Pareto chart

2.1.10 Benefits of Quality management in the Construction Projects

The Quality Management System (QMS) that is used in the construction industry really refers to quality planning, quality assurance and quality control. The QMS helps achieve objectives and compliance of the construction industry. It is to ensure that construction projects are successfully completed and within the constraints given, such as, specified period and at minimum possible cost. Projects are expected to find a balance between cost, quality and time.

Balancing cost quality and time

However, it is possible to keep low cost and high quality but at the expense of time. Conversely, it is possible to finish a fast project with high quality but at high cost. High quality is important for a successful project although it may not be primacy for the client. How do you keep an appropriate level of quality determined earlier during the phases of construction? You need to take preventive action. This why you need a Quality Management System. Construction and commissioning are two phases critical to the project as it will impact its operability, reliability and maintainability. The QMS will support you in all phases by audit and RCA processes.

Need of a Quality Management program

A good construction Quality Management System (QMS) program can ensure a smooth and trouble-free transition with minimal defects, to the commissioning phase. Poor quality will have a negative effect on the project and the construction company. Issues can be rectified after taking a RCA.

The QMS is essential to help meet the requirements of the promoters/owners, constructors and other participants involved, to yield higher customer satisfaction. Construction players realize the importance of compliance and audit benefits for the construction industry. Some contractors have even worked hard to be certified with MS ISO 9000, even though the acceptance for this standard is not wide enough, owing to a perception that this certification would incur additional expenditure and face barriers during the implementation of the system. However, they fail to realize that implementing it will generate value addition and savings.

Quality is for Success

Whereas poor quality can lead to unwanted cost escalation to the constructor. It could incur costs due to failure, prevention and appraisal. Therefore, the concept of quality has to be built into the process right from beginning and over all phases. Starting from a quality management plan at the project planning stage, where drawing and plans are made, it is important at inception. Quality

standards and quality design can enhance the project's quality with the continued support of management.

Quality management in construction is the policies, processes and procedures put in place (typically by management) to improve an organization's ability to deliver quality to its customers - whether those customers are clients/owners, contractors or subcontractors - on a consistent and constantly improving basis. While every construction company on earth wants to deliver quality on every phase of works and every project, it is the establishing of these internal and external principles and guidelines which actually results in quality. The major objectives of quality management are:

• To minimize the defects on asset delivery or handover

• To identify and solve defects and issues before your customers do - safeguarding your reputation

Achieving these objectives carries some many obvious benefits - none more beneficial than continuing to get more work and building a strong positive reputation. For a construction project, quality begins with requirements carefully developed, reviewed for adherence to existing guidance and ultimately reflected in criteria and design documents which accurately address these needs. Therefore, the designer establishes the quality standards and the contractor in building to the quality standards in the plans and specifications, controls the quality of the work. For Rumane, construction project quality management is defined as the fulfillment of owner's needs per defined scope of works within a budget and specified schedule to satisfy the owner's / user's requirements. The purpose of CQM is the Government's efforts, separate from, but in coordination and cooperation with the contractor, assure that the quality set by the plans and specifications are achieved. CQM is the combined effort of the contractor and the Government. The contractor has primary responsibility for producing construction through compliance with plans, specifications, and accepted standards of the industry (U.S. Army Corps of Engineers, 2004).Preventing mistakes is much more time and cost effective than correcting them - which is why establishing a strong quality management plan is a good way to improve quality. The upfront investment of creating a coherent and comprehensive quality management plan often pays big dividends throughout the life of a project.

2.2 Empirical Literature

The empirical literature provides empirical evidences of quality management practices in construction projects. Additionally, at the end of this section the conceptual framework of this study is presented.

Construction organizations have increasingly adopted quality management as a strategic approach to meet client requirements and address quality-related issues. This section delves into additional research conducted in related fields. Notably, one of the key studies in this empirical evaluation is "Effectiveness of Quality Management System (QMS) on Building Projects" in Metro Manila, Philippines. This study underscores the efficacy of the process approach to QMS, emphasizing the importance of achieving project success in construction projects with a focus on customer satisfaction. It also notes the direct and indirect impacts of QMS on project cost and time, with a lesser impact on quality and scope. Subsequent research endeavors should concentrate on sustainable development in construction projects from the vantage point of QMS implementation (Neyestani, B. (2016).

Another critical finding suggests the need for strengthening quality management in Indian construction projects, addressing execution-related challenges (Abdulsalam, 2013). The study on elements influencing design quality in construction projects in the Syrian construction sector reveals various factors affecting design quality.

In Kenya, Everline's study identifies four paramount factors that significantly affect general construction projects: personnel experience and qualifications, material and equipment quality, conformance to specifications, and quality assurance training and meetings (Everline, 2014). Joy's research on the factors influencing the quality of construction projects highlights a range of determinants, including material and labor considerations, financial aspects, adherence to codes and standards, support from top management, management factors, contractor and designer selection, cooperation between stakeholders, contract documents, and communication (Joy, 2014).

According to Agbenyega (2014) on the quality management practices of Ghanaian construction firms, key steps to overcoming potential obstacles include management commitment, effective communication between managers and employees, employee involvement, detailed work

scheduling, routine inspections, quality audit reports, team member training and education, as well as review and analysis (Agbenyega, 2014).

In his study Birhanu's lists various obstacles to achieving project quality, including ineffective supervision, communication gaps, commitment management, availability of appropriate tools and materials, involvement of quality assurance teams, staff turnover, skilled turnover, ineffective resource management, and issues with contractors (Birhanu, 2014).

Additionally, Temesgen's research in Ethiopia's public sectors highlights three pivotal issues linked to project failures: a lack of adequately qualified human, financial, and material resources; management-related challenges, such as responsibility sharing, follow-up, and coordination; and technical issues, including alignment with sectorial policy and strategy, technical expertise, and project design (Temesgen, 2007). Despite variations due to the unique project environments, these recurrent challenges identified by numerous researchers form a foundational basis for this research study.

The literature exhibits a comprehensive understanding of quality management practices in various contexts, but a noticeable gap exists in the Ethiopian construction sector, particularly within Addis Ababa. This geographical and sector-specific gap underscores the need for an in-depth exploration of quality management practices tailored to this rapidly evolving construction hub.

Previous research has employed a range of variables, encompassing personnel qualifications, material and equipment quality, compliance with specifications, and management commitment. Additionally, variables related to financial considerations, adherence to codes and standards, and the impact of issues like staff and skill turnover and resource management have been examined in these studies. These variables collectively contribute to a nuanced understanding of quality management in construction.

2.3 Research gap

The gap considered the missing piece or pieces in the research literature, is the area that has not yet been explored or is under-explored: Quality management system need having the organizational structure, responsibilities, procedures, processes and resources for implementing quality management such that there is a guiding framework to ensure that every time a process is achieved the same information, method, skills and controls are used and practiced in a consistent

manner. Quality Management System (QMS) has been defined as a comprehensive systematic, integrated, consistent, organization-wide effort devoted to customer satisfaction through continuous enhancement. With its primary focus being the contribution of everyone, QMS has the potential to advance business results, greater customer satisfaction, worker participation, team working and better management of workers within companies. Though, the real estate industry in Ethiopia has been slow to the concept of QMS.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter explains the methodology of the study including the research approach, research design, population and sampling, data collection instruments, reliability and validity test, data analysis techniques and ethical considerations.

3.2 Research Approach and design

The broad strategy for how the researcher would approach addressing the research questions is referred to as the study design, according to Saunders, Lewis, and Thornhill (2009). It includes precise objectives that are drawn from the research question(s), lists the sources from which the researcher plans to gather data, and takes into consideration the limitations that will unavoidably exist in addition to considering ethical concerns. The mixed methods design was used in this study, which is a way for gathering, interpreting, and producing results by combining both quantitative and qualitative data at some point of the research process within a single study. An interview and a questionnaire survey made up this strategy's two complementary methodologies. While the first questionnaire produced quantitative data, the second one supplied greater qualitative details while also verifying the quantitative results. When compared to employing a single approach, findings based on the adoption of mixed methods add value, according to Hurmerinta-Peltomaki and Nummela (2006). This study is a descriptive form of research since its goal was to evaluate the use of QMS. The traits outlined in the study question were measured using a descriptive survey approach. When discussing the use of the descriptive survey technique, it was mentioned that this approach is a way of looking at an issue that aims to describe and analyze what is happening right now in terms of circumstances, practice, process, trends, impacts, attitudes, and beliefs, among other things.

3.3 Population and Sample Design

The target population for this study was one of the real estate construction firms found in Addis Ababa. This real estate company was selected using random sampling techniques from list of real

estate Company which had practiced QMS in their organizational system .The company is well organized and run projects in all sub cities of the city. Population size of the study was all of the permanent employees of NOAH real estate Company out of which 40 personnel (6 Project manager, 5 Supervisor , 16 Site and office engineer, 13 Forman and others) who are working directly on project managerial and project expert level were selected purposively.

3.4 Data sources and data collection tools

For the investigation, primary and secondary data sources were also employed. The most crucial methods of data collecting, according to (Kothari, 1985), are questionnaires, interviews, and direct observations. According to Cooper and Schindler (2008), the questionnaire's five-level Likert Scale was used to collect the necessary data. The Likert scale is popular because it enables measurement of the opinions of the respondents regarding how they disagree or agree, reject or accept the traits or elements offered as questions on a scale of 1 to 5 (from the least to the most). Semi-structured interviews and both closed- and open-ended questionnaires will be used as the principal data collection methods in this study.

3.5 Data analysis and interpretation

Analysis and discussion was done based on the primary & secondary data obtained. The research questions were addressed one at a time. Statistical results were described in a way that it is performed to answer the research question. The statistical tools were aligned with the objectives of the research. Moreover, the qualitative data was transcribed and then coded and put into categories and discussed. For easy understanding of the level of practice and implementation QMS of the company, the researcher had formulated a rating system which encompasses an Excellent, Very Good, Moderate, and Unsatisfactory rating to summarize and conclude the practice and practice of QMS based on the participant’s response.

3.6 Research validity and reliability

The quality of research design determined by different dimensions these are validity and reliability to applied to establish the checked of balanced research so Validity has important factor to identify the relevant of validity. Which means the results are true or correct and that can be represent by analysis approach to show the validity of research while reliability is a measure for the consistency

of collected data through time and among respondents (Patton, 2002) According to Field (2009), using Cronbach alpha, coefficient alpha provides a good estimate of reliability. Alpha values of 0.7 or higher are considered to be adequately reliable. Values between 0.5 and 0.7 are acceptable while values of below 0.5 are considered to be less reliable.

3.7 Ethical Consideration

Ethical considerations in research are a set of principles that guide your research designs and practices. Scientists and researchers must always adhere to a certain code of conduct when collecting data from people. The goals of human research often include understanding real-life phenomena, studying effective treatments, investigating behaviors, and improving lives in other ways. What you decide to research and how you conduct that research involve key ethical considerations. In order to keep the confidentiality of the data given by the respondents they were not required to write their name and they were assured those responses will be treated in strict confidentiality. The purpose of the study was related in the preliminary part of the questionnaire. Furthermore, the researcher tried to avoid misleading.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSION

4.1Introduction

This chapter presents the result of the analysis and discusses that the data collected to answer the research questions and the derived objectives that the study was set to achieve. The result of the survey was discussed by triangulating the different source results: questionnaire results, interview and document review results. For the purpose of clarifying the methods that the researcher analysis and discussions: Quantitative data was analyzed by employing descriptive and using statistical package for social science (SPSS) version 20. A total of 40 questionnaires were spread to various respondents of interest for the study. Out of the covered population, 40 were responsive representing a response rate of 100%.

4.2Analysis of Results and Discussion

4.2.1Demographic Characteristics of the Respondents

Gender composition

The demographic statistics shown in the figure below illustration the distribution of respondents by gender. Participants were asked to indicate their gender by selecting the appropriate option provided (male or female). Accordingly only 6 (15%) of the respondents were female while the remaining 34 (85) % were male. This clearly indicates that the sample population was dominated by male respondents.

Table 4-1 Gender of the respondents

Gender of respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	6	15.0	15.0	15.0
	Male	34	85.0	85.0	100.0
	Total	40	100.0	100.0	

Source: own survey, 2022

Educational Background

From the analysis on educational background of the respondents, it was found that only 20 respondents (50.0%) have Bachelor Degree, 8respondents (20.0%) have master's degree and 8 respondents (20.0%) have a diploma and 4 respondents (10%) have certificate and others. This profile shows that majority of the respondents have Bachelor degree or first degree level ad it indicates that most of the workers need to upgrade their educational and knowledge level according to the quality management system knowledge through training and learning.

Table 4-2 Educational Background of Respondents

educational level of the respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Masters and above	8	20.0	20.0	20.0
	Degree	20	50.0	50.0	70.0
	Diploma	8	20.0	20.0	90.0
	Certificate and others	4	10.0	10.0	100.0
	Total	40	100.0	100.0	

Source: own survey, 2024

Work Experience

The study choose to consider respondent's level of experience in the project area, which is vital towards knowledge of project management. 25% of the respondents have less than 5 years' work experiences, 40% have between 5-9 years, and only 3% of them have 15years and above of experiences and 27% of respondents have between 10-15 years of experiences. This profile shows that most employee are between 5-9 years experienced in the organization. As we understand from the result it an average years of experience and it shows NOAH real estate should employ more experienced staffs specially on quality management knowledge area.

Table 4-3 Work Experience of the respondents

work experience of the respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	more than 15 years	3	7.5	7.5	7.5

	10-15 years	11	27.5	27.5	35.0
	5-9 years	16	40.0	40.0	75.0
	less than 5 years	10	25.0	25.0	100.0
	Total	40	100.0	100.0	

Source: own survey, 2024

Work Division

From table 4.3, the work Most of the employees are Technical team member. This indicates that other professions like project management have less included.

Table 4-4 work division respondents

work positions of the respondents					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Project manager	6	15.0	15.0	15.0
	Supervisor	5	12.5	12.5	27.5
	Site and office engineer	16	40.0	40.0	67.5
	Forman and others	13	32.5	32.5	100.0
	Total	40	100.0	100.0	

Source: own survey, 2024

4.2.2 General Understanding about Quality Management System

Table 4-5 General Understanding about Quality Management System

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**
1	use any form of QMS in your current construction industry	1(2.5%)	1(2.5%)	13(48.5%)	22(50%)	3(35%)
2	Effective communication about QMS from Senior Management in your current project	0(0%)	3(5%)	12(22.5%)	17(35%)	8(30%)

3	having a Quality Manager responsible for implementing Quality Plans and Checklists	1(2.5%)	2(5%)	12(30%)	16(22.5%)	9(40%)
4	QMS help reduce defective work and the number of problem corrections in your current project	1(2.5%)	11(2.5%)	11(52.5%)	9(20%)	8(22.5%)
5	Have you ever received training in any form of QMS	2(5%)	18(27.5%)	13(32.5%)	3(17.5%)	4(17.5%)
6	Top management Practice and aware the effectiveness of the QMS	1(2.5%)	2(5%)	19(47.5%)	6(15%)	12(30%)
7	Quality management systems are too difficult to learn and implement	13(32.5%)	15(37.5%)	8(20%)	3(7.5%)	1(2.5%)

Source: own survey 2024

According to Table 4.5's results, over 85% of respondents gave a positive response about the QMS. According to the around 65% of respondents here is a good Effective communication about QMS from Senior Management in your current project and also respondents result show there is moderate disagreement about the help of QMS to reduce defective work and the number of problem correction in their current projects.This outcome may indicate that they are totally reliant on one another, that they think quality managers should be in charge of practicing and implementing the QMS, and that they think it's not too hard to do so. Additionally, it was discovered that the Noah real estate project had the lowest level of QMS training and communication.

4.2.3 Project quality planning, Quality Assurance, and Quality Control

Table 4-6 Project Quality Planning

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**
1	Measurable quality objectives are established for all functions and levels within the organization.	4(10.0%)	3(7.5%)	13(32.5%)	16(40%)	4(10.0%)
2	Quality manual and procedures for key activities are documented	5(12.5%)	11(27.5%)	18(45%)	3(7.5%)	3(7.5%)
3	Resources and activities needed to achieve Quality Objectives are identified and allocated.	2(5.0%)	3(7.5%)	13(32.5%)	16(40%)	6(15.0%)
4	procurement, based on the construction programme	0(0.0%)	6(15.0%)	19(47.5%)	8(20.0%)	7(17.5%)
5	The organization established and maintains a quality manual.	2(5.0%)	11(27.5%)	11(27.5%)	10(25.0%)	6(15.0%)
6	Quality policy and quality objectives are documented in quality manual.	3(7.5%)	3(7.5%)	12(30.0%)	13(32.5%)	9(22.5%)
7	Documentation control systems are in place to track revision levels of all specifications, drawings, forms and other documents	4(10.0%)	3(7.5%)	18(45.0%)	10(25.0%)	5(12.5%)

8	list of quality procedures and work instructions applicable to project by making reference to the company's Quality Manual and Procedures	2(5.0%)	9(22.5%)	13(32.5%)	13(32.5%)	3(7.5%)

Source: own survey 2024

The majority of the data indicates that respondents were only somewhat in agreement with Measurable quality targets are set for project quality planning procedures as well as for all organizational levels and functions.

According to Measurable quality objectives are established for all functions and levels within the organization question 32.5% of respondents are neutral and around 50% of them are agreed. When we see the second question 40% of respondents disagreed on Quality manual and procedures for key activities are documented and 45% of them are neutral. And the third question was Resources and activities needed to achieve Quality Objectives are identified and allocated then the majority of the respondents (22%) was agree on it but only 5% of them are not agreed. When we see about procurement, based on the construction programme most of them are gives neutral responses and 15% of the respondents agreed on it.

About the last three questions means Quality policy and quality objectives are documented in quality manual, Documentation control systems are in place to track revision levels of all specifications, drawings, forms and other documents and list of quality procedures and work instructions applicable to project by making reference to the company's Quality Manual and Procedures the most of the responses was positive and the company has some good part of it.

Quality planning is a set of actions that aims to identify quality system policies, objectives, and requirements as well as to clarify how these will be implemented, how the objectives will be reached, and how the requirements will be met, according to Harris and McCaffer (2001). Additionally, quality planning refers to meeting process and product (deliverable) quality requirements, according to the body of knowledge in project management. According to Chung's (1999) recommendations, quality planning includes the standard factors for building projects. Thus, the outcome demonstrates that most planning procedures, including updating the quality

plan, appropriate quality records from subcontractors, internal quality audits, company's Quality Manual and Procedures and schedules of subcontractor nomination, material and equipment.

In project management, project planning is a procedural stage when necessary paperwork is generated to guarantee the project's effective completion. All of the steps required to design, organize, integrate, and coordinate further plans are included in the documentation. The project plan outlines in detail how the work will be carried out, overseen, managed, and concluded. Project planning, an essential function in any technical company, guarantees timely delivery and success. Aiming for perfection in the plan will boost the likelihood of client happiness and their confidence in the company for further investments. It's the most important stage in lowering project failure rates and risk. After all, if a great idea is eventually poorly carried out, nobody wins. The most common error that results in project failure is inadequate project planning. If something does not start right, it would be delusional to think that it will end right. According to this case poor planning will result in the budget being left out of the project's main agenda. Additionally, the estimation of the funds that will be used is not made due to poor planning. This means that funds will be misused and wasted. The completion of the project will record tremendous losses, and the project will fail and also while working on the projects, the individuals won't fully comprehend what is expected of them. The absence of deadlines will foster a slack environment among the team members. This indicates that the job will not be finished on schedule and that the output will be subpar work.

Project quality Assurance

Table 4-7 Project Quality Assurance

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**
1	List of quality records to be kept, including appropriate quality records.	2(5.0%)	12(30.0%)	14(35.0%)	6(15.0%)	6(15.0%)
2	Appropriate checking, measurement or testing of products and keeping proper records	3(7.5%)	13(32.5%)	15(37.5%)	7(17.5%)	2(5.0%)

3	The company uses Quality Planning Checklists before actual works are executed	1(2.5%)	11(27.5%)	17(42.5%)	9(22.5%)	2(5.0%)
4	Evaluates and selects subcontractors on their ability to satisfy specified requirements.	2(32.5%)	14(32.5%)	13(32.5%)	7(32.5%)	4(32.5%)
5	Have standardized quality management guidelines	3(32.5%)	7(32.5%)	15(32.5%)	11(32.5%)	4(32.5%)

Source: own survey 2024

This result shows that the majority of respondents were indifferent or disagreed with the quality assurance performance, which is insufficiently applied to proper product inspection, testing, measurement, and record-keeping. It also shows that the requirements for the quality management system are not clearly stated in tender and contract documents, and the other result indicates that the proper requirements for each contract were not chosen. In order to provide assurance that the project will meet the quality standards specified by the project, Harris and McCaffer (2001) defined quality assurance as taking place during the project's execution phase and involving the regular evaluation of the project's inclusive performance.

Project quality Control

Table 4-8 Project Quality Control

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**
1	Monitor and standardize measuring devices, include detailed documentation for all processes	1(32.5%)	9(32.5%)	16(32.5%)	9(32.5%)	5(32.5%)
2	Select what to control and set standards that provide the basis for decisions regarding possible corrective action.	2(32.5%)	10(32.5%)	17(32.5%)	11(32.5%)	0(0.0%)

3	The project can identify, estimate, schedule and allocate all relevant resources.	0(0.0%)	13(32.5%)	14(32.5%)	11(32.5%)	2(32.5%)
4	Establish the measurement methods used, compare the actual results to the quality standards.	4(32.5%)	10(32.5%)	12(32.5%)	14(32.5%)	0(0.0%)

Source: own survey 2024

This finding demonstrates that respondents' opinions on organizations implementing quality control procedures, which include Measurement equipment should be standardized and monitored, and thorough process documentation is part of this. Choose what needs to be under control, establish criteria that serve as a foundation for judgments about potential corrective action, compare actual outcomes to quality standards, and use a sufficient checklist as a quality control tool in their construction activities. Chang (1999) defined quality control procedures as something that an effective quality control system ought to take into account. In the meantime, certain project quality control process aspects are not taken into account by the company.

Project quality Management System factors

Table 4-9 Project Quality Management System Factors

No	**DESCRIPTION**	1	2	3	4	5
1	Consistency and completeness of design documentation.	2(5.0%)	9(22.5%)	12(30.0%)	13(32.5%)	4(10.0%)
2	cooperation between the contract's parties	2(5.0%)	12(30.0%)	18(45.0%)	8(5.0%)	0(0.0%)
3	Communication skills of labors	2(5.0%)	11(27.5%)	15(37.5%)	12(30.0%)	0(0.0%)
4	System to assess the performance of subcontractors	2(5.0%)	14(35.0%)	9(22.5%)	11(27.5%)	4(10.0%)

5	Skill and experience of Supervision staff	1(2.5%)	3(7.5%)	13(32.5%)	14(35.0%)	9(22.5%)

Source: own survey 2024

According to Consistency and completeness of design documentation question around 42.5% respondents are agreed, 30% are neutral and 27.5% are disagreed. This shows us there is a good activities on Consistency and completeness of design documentation work of the company. Then its 45% of respondents are neutral, 5.0% agreed and 35% of them are disagreed on this question so it indicates there is a lack of collaboration between contract parties. When we see the third question it is about the communication skill of the labour in this part there was 30% of agreement, 32.5% was disagreed and 37.5% was neutral. The result shows most of the labors has no good communication skill.

According to System to assess the performance of subcontractor’s question there is 37.5% agreement on it, 22% was neutral and the rest of them was disagreed.The project's intermediate goal of exceeding the project quality management system was affirmed by the respondents. This shows how NOAH Real Estate handles problems relating to QMS aspects and how it works to always improve in order to both meet and exceed customers' expectations. However, the responses to the interview and open-ended questionnaires show that NOAH Real Estate made an effort to go above and beyond what the customers expected when they introduced programs like suggestion boxes, customer survey cards, and focus groups. These programs make it very evident to clients that they value their opinions.

CHAPTER FIVE

SUMMARY OF MAJOR FINDINGS, CONCLUSION AND RECOMMENDATION

The research findings were used to create the summary, conclusions, and recommendation in this section. This study's primary goal is to look into NOAH Real Estate Company's quality management system implementation and practice. In section four of this paper, the questionnaire survey results and a discussion of the findings in accordance with the literature research were provided.

5.1. SUMMARY OF MAJOR FINDINGS

Prior to conducting the primary analysis of the study, a reliability test was conducted to determine the reliability of the questionnaire. With a Cronbach's Alpha value of more than 0.70, all three of the questionnaire sections were deemed sufficient and dependable in this regard.

Related to the demographics, it's possible that the majority of the company's employees and senior management specialists have sufficient experience in their designated roles to practice and implement QMS, which could further assist them in improving and elevating their institutional activities to new heights of success.

This project's primary goal was to pinpoint NOAH Real Estate Company's objectives in order to enhance quality management practice.

1. The following is a list of the primary findings related to the aims, which were to comprehend managerial responsibilities in NOAH real estate construction projects.

A. According to client feedback, NOAH Real estate has validated a very good approach and implementation in terms of comprehending the needs of the consumer and going above and beyond their expectations.

B. In terms of relationship management practices, NOAH Real Estate does well when it comes to identifying and choosing suppliers in order to control expenses, maximize resources, and add value to the project environment.

2. the most important conclusions about the employees' fundamental understanding of the QMS's implementation are as follows: they understood that the quality manager is in charge of carrying out quality plans and checklists, and they applied and communicated the QMS effectively in their project some activities.

According to the respondents, a QMS could assist them in lowering the amount of subpar work and issues with their ongoing project. This suggested that they are knowledgeable about and have implemented a QMS in their business. However, the reaction indicates that the training that has been given to them appears to be insufficient.

Among the difficulties faced by NOAH Real Estate are: - The inability to track down specific project activities and information, as well as the lack of a designated system administrator or supervisor: - Lack of creativity, Inadequate monitoring and ongoing development and Deficit in ongoing QMS training; Deficit in employee dedication; High attrition rate among qualified staff.

The examined empirical literature also showed that, while some construction companies use and execute QMS, some of the impediments mentioned above also exist there. The research findings and the highlighted difficulties exhibit a degree of similarity, despite certain variations arising from the practical environment of the initiatives.

5.2. CONCLUSION

With the overall goal of evaluating the quality management procedures, the study evaluated project quality management techniques in real estate projects at NOAH Real Estate. According to the study's main conclusions and the extensive discussion of related material in the study's literature review section, effective project management increases the likelihood that projects will be completed on schedule, within budget, and with the desired scope and quality. Project quality management also aids in achieving project limitations, such as completing the project's organizational goal and maintaining customer happiness.

The next crucial step is to put in place an extensive quality control system that runs from the beginning of project planning to the completion of project implementation.

Numerous reasons, including inadequate management support, issues with contractors, arbitrary deadlines, and a lack of a quality management policy and plan for real estate projects, pose challenges to the organization's project quality management practice.

As a result, it can be said that implementing the entire quality management process and creating an organizational quality management strategy aid in resolving the quality management-related issues raised and addressing the variables influencing project quality.

1. The findings also make it possible to draw the conclusion that the senior management of NOAH real estate is not sufficiently dedicated to the application and upkeep of QMS.

2. It is evident that a real estate company's ability to compete in the construction industry is aided by the high level of employee involvement. Additionally, it is determined that the organization set up a program for learning and information sharing that included both general and position-specific needs.

3. It can be said that the organization's practice of activities linked to general improvements is carried out in an inadequate manner.

4. Design-related issues are the most crucial issues to address in order to lower quality issues. i. It is clear that NOAH real estate initiatives performed below expectations.

5. It may be said that NOAH real estate projects clearly demonstrated poor performance in terms of obtaining, keeping track of, evaluating, and assessing trustworthy data.

6. It can be said that the organization's practice of activities linked to general improvements is carried out in an inadequate manner.

5.3 RECOMMENDATIONS

It is advised that NOAH Real Estate take into account the following areas for improvement in the management of its projects in general and quality management in particular based on the study's findings.

- Additionally, the majority of NOAH Real Estate's staff members has first-level degrees. Thus, the company has to upgrade its skill set, and the majority of its staff are engineers, which suggests that project quality management is not a top priority for the management system. Thus, in order to ensure effective project quality management, NOAH Real Estate has to hire more project managers. And Contractors ought to be required to teach quality management methods at all levels.
- In order to reduce the obstacles associated with real estate construction projects, the organization should prioritize the project management body of knowledge domains and allocate additional project manager professionals at the organizational level.
- Construction project quality management necessitates cooperation from clients, contractors, and consultants based on clearly defined roles and duties. As a result, the business needs to make a big effort to develop partnerships and collaborative efforts with its stakeholders.
- The organization does not currently have a sufficient quality management policy document; instead, it uses project agreement documents as a basis or point of reference for quality management. However, since the industry is working on numerous projects to increase customer satisfaction, a quality policy ought to be established.
- In order to manage the quality of its projects in accordance with the standards of other literature, the company can utilize the study's results to pinpoint areas that need development. This will enable the project to be managed more effectively and efficiently.

References

Agbenyega. (2014). Quality management practices of building. *semanticscholar*.

Amir Faraji et al. (2022). A Bid/Mark-Up Decision Support Model in Contractor's Tender Strategy Development Phase Based on Project Complexity Measurement in the Downstream Sector of Petroleum Industry. *Journal of Open Innovation Technology*.

Andy Neely, et al. (1995). Performance measurement system design: A literature review and research agenda. *International Journal of Operations & Production Management*.

Azeb, f. (2021). ASSESSMENT OF QUALITY MANAGEMENT .

Birhanu, B.& Daniel K. (2013). Quality management practice in Ethiopia. *African Journal of Business Management.*

Crawford. (2002).

D.Ashokkumar. (2014). Study of Quality Management in ConstructionIndustry. *International Journal of Innovative Research in Science, Engineering and Technology*.

David Arditi,Hüsnü Murat Günaydın. (1997). Total quality management in the construction process.

ISO 9001,Quality management systems . (2015). Switzerland.

Lawrence Muhwezi, Baguma Andrew,Joel Mubiru. (2021). Assessment of Quality Management Practices of Building Construction Firms in Uganda: A Case of Kamwenge District. *Journal of Civil, Construction and Environmental Engineering*, 1-8.

Mohammed Resan Kareem,and Gozde Ulutagay. (2022). The Factors Effects on Quality Management System in Construction. *ssrn*.

Ogunbiyi, M. (2014). The National Building Code and the Construction Industry Professionals in Nigeria. *International Journal of Social Sciences and Entrepreneurship* .

PMI, P. M. (2008). *A Guide to the Project Management Book of Knowledge (PMBOK).* newton square.

Tan Chin Keng, H. A.-R. (2011). Study of Quality Management in Construction Projects. *International Islamic University Malaysia, Kuala Lumpur, Malaysia*.

Tsigereda Garomsa,Elmer De Castro Agon,Sintayehu Assefa. (2019). Concept of Value Engineering and Current Project Management Practice in Ethiopian Building Construction Projects.

Yimam, A. H. (2011). Project Management Maturity in the Construction Industry of Developing Countries (the Case of Ethiopian Contractors).

APPENDIX

Questionnaire

Dear Respondents, I am Fetalew Asnakew Adane, a graduate student at St. Merry University. I am conducting a research on'' Assessment of quality management system in NOAH Real estate'' in partial fulfillment of Master of Arts in project management. On this questionnaire writing your name is not required and your answers will be kept completely confidential. Your honest answers will help me to understand in identifying which contextual factor most important for implementing quality improvement projects and to identify problems related to quality improvement project and finally to recommend the possible intervention to the problem. I would greatly appreciate your voluntary participation in filling the questionnaire by spending some of your time.

Part one: General Information

Sex	Male		Female	
Age	>51	36-50	26-35	<25
Work Experience	>15 Years	10-15 Years	9-5 Years	Below 5 Years
Educational Level	Masters	Degree	Diploma	Certificate others
Work Position	Project manager	supervisor	Forman	Other

Part Two:

1. What is your organization's understanding of quality?

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**
1	use any form of QMS in your current construction industry					

2	Your communication about QMS from Senior Management in your current project					
3	having a Quality Manager responsible for implementing Quality Plans and Checklists					
4	QMS help reduce defective work and the number of problem corrections in your current project					
5	Have you ever received training in any form of QMS					
6	Top management Practice and aware the effectiveness of the QMS					
7	Quality management systems are too difficult to learn and implement					

Part Three: Project quality planning, Quality Assurance, and Quality Control

Planning

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**
1	Measurable quality objectives are established for all functions and levels within the organization.					
2	Quality manual and procedures for key activities are documented					
3	Resources and activities needed to achieve Quality Objectives are identified and allocated.					
4	procurement, based on the construction programme					
5	The organization established and maintains a quality manual.					
6	Quality policy and quality objectives are documented in quality manual.					
7	Documentation control systems are in place to track revision levels of all specifications, drawings, forms and other documents					
8	list of quality procedures and work instructions applicable to project by making reference to the company's Quality Manual and Procedures					

Quality Assurance

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**

1	List of quality records to be kept, including appropriate quality records.					
2	Appropriate checking, measurement or testing of products and keeping proper records.					
3	The company uses Quality Planning Checklists before actual works are executed					
4	Evaluates and selects subcontractors on their ability to satisfy specified requirements.					
5	Lack of standardized quality management guidelines					

Quality Control

No	**DESCRIPTION**	**1**	**2**	**3**	**4**	**5**
1	Monitor and standardize measuring devices, include detailed documentation for all processes					
2	Select what to control and set standards that provide the basis for decisions regarding possible corrective action.					
3	The project can identify, estimate, schedule and allocate all relevant resources.					
4	Establish the measurement methods used, compare the actual results to the quality standards.					

Part Four: Project quality Management System factors

No	**DESCRIPTION**	1	2	3	4	5
1	Consistency and completeness of design documentation.					
2	cooperation between the contract's parties					
3	Communication skills of labors					
4	System to assess the performance of subcontractors					
5	Skill and experience of Supervision staff					