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ASSESSMENT OF QUALITY CONTROL AND QUALITY ASSURANCE PRACTICES IN SELECTED FINISHING WORKS: THE CASE OF PRIVET BUILDING CONSTRUCTION PROJECTS IN NOAH REAL ESTATE

BY: BRUKTAWIT MAMO

July, 2024

ADDIS ABEBA, ETHIOPIA

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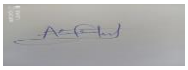
Abebaw Kassai (Phd) 

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LIST OF ABBRIVATION

ISO	International Organization for Standardization
PM	Project Management
PMBOK	Project Management Body of knowledge
QC	Quality Control
QA	Quality Assurance
SPSS	Statistical Package for Social Science
TQM	Total Quality Management

Abstract

This study evaluates the quality control and quality assurance practices in the finishing works of private building construction projects at Noah Real Estate. The primary objective is to identify gaps and propose actionable recommendations to enhance these practices, in that way improving overall project outcomes and client satisfaction. The research employs a mixed-methods approach, combining quantitative data and qualitative Key findings reveal significant opportunities for improvement in current quality control and quality assurance practices, particularly in the adoption of strict quality standards, enhancement of staff training programs, implementation of rigorous inspection processes, and integration of advanced technologies. These improvements are essential for ensuring higher quality standards, reducing defects, and minimizing rework. The study also emphasizes the importance of fostering a culture of continuous improvement and conducting further research to address evolving challenges in quality management. The recommendations provided aim to guide stakeholders in enhancing their quality control and quality assurance measures, ultimately leading to better project performance and increased client satisfaction.

Keywords: Quality control, Quality assurance, Finishing works, Construction projects, Quality management. Noah Real Estate.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The construction sector is one of the important sectors in developing countries that contribute to development. This is mostly due to the fact that developing nations rely heavily on the expansion and improvement of their physical infrastructure. The construction sector has a large contribution to the national economies of all nations and is an important player in those economies by creating employment and financial stability for those countries. (Fekade, 2020) Construction practices vary globally due to factors such as building codes, culture, government dynamics, management practices, and natural resources. Understanding these differences can help alleviate housing shortages and promote sustainable development. (Wenzhe.T et.al., 2009)

Many parties are involved in construction projects, such as the owner, designer, contractor, and numerous more experts from related industries. Every one of these players contributes to the use of quality in building projects. Together with the other participants in the construction process, these individuals also depend on and are impacted by one another. As a result, building projects are now more complex and technical, and significant work is needed to cut down on rework and the expenses related to materials, labor, and engineering. (Razzak, 2011)

One of the most important elements in the success of building projects is quality. Both the success of a construction project and its quality can be defined as the project participants' expectations being met, or their level of satisfaction. Ensuring quality is a challenge for construction industry, as it is essential to the success of projects. Construction costs can be considerably decreased by implementing quality assurance and control procedures, which are similar to those employed in the manufacturing and service sectors. During the Emergency Rehabilitation and Modernization Project of the Taunsa Barrage, an effective illustration of infrastructure development in under developed nations. Using quality management systems and standards for quality assurance and control. (Ammad.H et.al., 2008)

Ethiopia, a developing nation, requires significant investment from both public and private sectors for economic growth. The construction industry faces poor quality management due to lack of regulation, skilled labor, and standards. Despite government investments and training, the industry still falls short of international standards. (Birhanu and Daniel, 2014)

Project management is used to examine the project against time, cost, and quality criteria during the house development process. These are just a few of the many issues that can be difficult for all involved parties in the construction process. Ethiopia's building sector has grown significantly since 2001. This may be a clear sign of the GDP's increasing contribution to the nation's overall economic growth as it has made a major impact on the economic growth and competitiveness of the economy in recent years. (Wongel, 2022)

Quality management practices in construction are crucial for successful building project delivery. They guide construction professionals in executing projects with quality standards, ensuring customer satisfaction and value for money. (Onoh.F, Emenike, Orji, and Obodoh, 2019)The Quality Management System in the construction industry focuses on quality planning, assurance, and control. The main goal is to ensure successful completion of construction projects within the best quality, stated period, and minimum possible cost. Research based on quality management systems recommends that construction companies create a flexible and conducive organizational atmosphere that encourages the development of quality management systems in all aspects of their work. (Pravin.M and Jalindar.P, 2015)

Quality assurance involves activities before manufacturing or planning products and services to ensure good quality and defect prevention. Quality control, on the other hand, is a set of activities during manufacturing or delivery by testing and blocking the release of defensive outputs. The primary objectives of quality control assignments include avoiding duplication of effort, ensuring every quality aspect is covered, providing clear responsibilities, effective guidance, and documentation of materials, installations, and tests. Construction companies must prioritize quality over schedule and budget in their projects. (Baba-Girei, 2021)

Noah Real Estate is a real estate company which is established in 2013 G.C. They have completed eight mixed-use, mid- to large-scale residential, five commercial, and ten residential projects. Ten more projects are now in development at various locations in Addis Ababa. Within

those ten years of experience, Noah has constructed 29 projects. Noah real estate is well-regarded real estate company that combines modern design innovation with a solid financial base. This combination gives them the ability to create strong visions and may arouse a desire to explore the interior right away. This combination gives the ability to give the industry leader in the real estate industry and establish a reputation for quality in build, design, and construction delivery. The study will evaluate the existing quality control and quality assurance systems and identify areas for improvement to enhance quality standards and operational efficiency within the projects. By doing so, it aims to contribute to improving construction quality and project management success in the real estate sector of Ethiopia.

1.2 Statement of the Problem

The real estate house construction sector is currently heavily criticized for the poor quality of construction project delivery, both in terms of the quality of the finished product and the methods implemented during the design of the project and building phases. (Bouzidi, Louafi, and Saighi, 2023)

Construction projects are unique because they serve business production and meet human's basic needs. In most building construction, less quality work occurs due to poor quality control and quality assurance systems. It is impossible to picture an engineering or construction project's effective completion without the inclusion of quality assurance and quality control. These two are, in fact, essential components of almost any work that comes to mind. (Bhattacharjee, 2018)

(Fekade, 2020) Research shows that the construction industry in Ethiopia, particularly within the public sector, faces significant challenges in ensuring the quality of finished building projects. Despite the critical importance of quality control (QC) and quality assurance (QA) practices, there is a notable gap in the effective implementation and management of these practices in the finishing works of construction projects. This gap leads to frequent defects and rework, which increases costs, delays project completion, and negatively impacts client satisfaction. However, existing research has not comprehensively evaluated these practices specifically in finishing works within private building construction projects. This gap limits the understanding of how these practices impact the overall quality of privet construction projects, leading to defects such as cracks, peeling, unevenness, stains, and other damages in buildings. (Fekade, 2020) Research

provides a valuable qualitative insight but it lacks the depth that quantitative methods could offer.

This study aims to address this methodological gap by employing a qualitative and quantitative approach to identify and evaluate the existing quality control and quality assurance practices in selected finishing works within Noah Real Estate's construction projects. This research seeks to address the limitations of previous studies by providing a detailed examination of quality control and assurance practices in finishing works. The study aims to identify gaps and areas for improvement to ensure that finished works meet design specifications and client requirements. Ultimately, this research intends to enhance construction practices and client satisfaction in finishing works projects, contributing to a higher quality standard in the private real estate construction sector.

1.2 Research Questions

1. What are the plastering, wall, and floor finishing work quality control and quality assurance practices in Noah real estate building construction projects?
2. How are quality control and quality assurance implemented in Noah real estate?
3. What are the challenges to implementing effective quality control, quality assurance, and quality management systems in the context of selected finishing works in Noah Real Estate?

1.4 Research Objectives

1.4.1 General Objectives

The objective of this research was to assess the quality control and quality assurance practices in the finishing works of private building construction projects at Noah Real Estate.

1.4.2 Specific Objectives

1. Identify and understand the existing quality control and quality assurance practices in the plastering, floor and wall finishing works of Noah real estate building construction projects.

2. Assessing the quality control and quality assurance implementation in Noah real estate.
3. Identifying the challenges to implementing effective quality control, quality assurance, and quality management systems in the context of selected finishing works in Noah Real Estate.

1.5 Scope of the Study

The study focuses on addressing the quality control and quality assurance practices in selected finishing works, specifically plastering, wall, and floor finishing, within private building construction projects at Noah Real Estate. The scope is limited to these finishing works, excluding other aspects of the construction projects.

The study's respondents was included project managers, site engineers, quality control personnel, contractors, supervisor involved in the finishing works of Privet Building Construction projects at Noah Real Estate. These respondents had been selected due to their direct involvement in the planning, execution, and supervision of the finishing works, providing valuable insights into the Quality Control and Quality Assurance practices.

The study was addressing the following variables:

Quality Control Measures: The study would assess the effectiveness of quality control measures implemented during the finishing works, including inspections, testing, and defect identification.

Quality Assurance Systems: The study would evaluate the quality assurance systems in place, including quality planning, quality control procedures, and quality improvement initiatives.

Project Management Practices: The study would examine the project management practices that impact Quality Control and Quality Assurance, such as scheduling, budgeting, and resource allocation.

These variables were selected due to their critical role in ensuring the quality of finishing works in construction projects. By addressing these variables, the study aims to provide a comprehensive understanding of the Quality Control and Quality Assurance practices in Privet Building Construction projects at Noah Real Estate.

Study Period

The study covered six months. This period was given to ensure that the study captures a representative sample of finishing works projects at Noah Real Estate, providing a comprehensive understanding of the quality control and quality assurance practices during this timeframe.

1.6 Significance of the Study

The findings of this study would have significant implications for both the construction industry and the specific context of Privet Building Construction projects in Noah Real Estate. By evaluating the quality control and quality assurance practices in finishing works, the study would provide valuable insights into the effectiveness of current practices and identify areas for improvement. The recommendations derived from this research would serve as a guide for stakeholders involved in these construction projects to enhance their quality control and quality assurance measures, ultimately leading to improved project outcomes and increased client satisfaction. Furthermore, the study would contribute to the existing body of knowledge in the construction industry by filling the gap in understanding the specific challenges and opportunities related to quality control and quality assurance in finishing works projects and it would helps as reference.

1.7 Limitation of the study

One of the major limitations of this research was that most of the previous research focused on overall construction building quality control and quality assurance studies on finishing work. Additionally, the availability of secondary data was limited due to the scarcity of existing

research. Furthermore, this research was limited to selected finishing work such as plastering, wall, and floor finishing work, which may have further constrained the findings.

1.8 Organization of the study

This thesis paper is organized into five chapters. Accordingly, Chapter one deals with the background of the study, the statement of the problem the research question, the objective of the study, the scope of the study, limitation of the study and significance of the study. The second chapter reviews theoretical, empirical and conceptual literature. The findings of some related studies conducted in the area have been presented. The third chapter addresses the study's methodology. The fourth chapter is the analysis and interpretation, and the final chapter is the conclusion and recommendation.

CHAPTER TWO

REVIEW OF LITRATURE

2.1 Introduction

The literature review for this study would explore previous research and publications related to quality control and quality assurance in construction projects. It would involve an extensive review of academic articles, books, and relevant industry reports websites. The review will focus on understanding the current state of knowledge regarding quality control and quality assurance practices in finishing works, specifically plastering, walls, and floors, this section would provide a comprehensive overview of the existing literature and identify any research gaps that need to be addressed in this study.

2.2 Theoretical Literature Review

2.2.1 Concepts of Quality

Construction management encompasses cost, schedule, safety, and quality. While cost, schedule, and safety have clear definitions, quality remains somewhat ambiguous, as "poor quality" can mean different things to different people. In construction, quality refers to meeting client requirements and regulatory standards, involving material quality, workmanship, design accuracy, and compliance. Effective quality management includes planning, assurance, control, and improvement; ensuring projects meet specifications and client expectations. Understanding and implementing these quality management principles is crucial for successful project delivery (Harris, McCaffer, & Edum-Fotwe, 2013).

Quality in construction is essential for all aspects of the project, including noticeable component deliverables, construction practices, cost and schedule management, and project management systems. It requires participants to accept these expectations and ensure the project meets all aspects. (PMBOK, 2016) Quality in construction means achieving acceptable performance levels from building operations. This is what is meant by quality in the construction sector. When the action satisfies or exceeds the client's or owner's requirements, this performance will be achieved. When a project is finished within the specified parameters outlined in the scope of work, it is considered to have been constructed with quality. (Pravin.M and Jalindar.P, 2015)

Project Quality Management involves determining quality policies, objectives, and responsibilities for a project to meet its intended needs. It implements the organization's quality management system and supports continuous improvement activities, ensuring project requirements are met and validated. (PMBOK guide, 2013)

"Project Quality Management in Construction The performing organization implements the quality management system through the policy, procedures, and processes of quality planning, quality assurance, and quality control, and undertakes continuous improvement activities throughout the project. As with safety and environmental management, quality management ensures that the project management system employs all of the processes needed to meet the project requirements, and that these processes incorporate quality. Project Quality Management shares many common characteristics with Project Safety Management and Project Environmental Management. The requirements are similar: it ensures that the conditions of the contract (including those contained in legislation and any project technical quality specifications) are carried out to implement quality to the project and its deliverables; it addresses management of the project and the product of the project (and its component parts); and it integrates with project risk, safety, and environmental management processes to accomplish the stated objectives." (PMBOK, 2016)

Quality in construction refers to the excellence of a construction project or structure, encompassing materials, workmanship, adherence to standards, durability, functionality, safety, and overall performance. Key components include high-quality materials, skilled labor, compliance with building codes, robust design and planning, rigorous quality control measures, client satisfaction, and sustainability. Adherence to building codes, regulations, and industry standards ensures safety, durability, and legal compliance, while meeting or exceeding client expectations and using environmentally sustainable practices is essential for long-term success (Wawak, Ljevo, & Vukomanovic, 2020).

Quality is the extent to which a product satisfies the requirements and limitations set by the building authority. This inspection ensures that the work is sufficiently durable and of high quality. To do this, inspections can be performed all the way from the point of material supply to the completed product. Important control issues that arise before and during construction include

the verification of soil quality, drawings and designs, structural safety, durability, requirements, material testing, equipment examination and finishing work . (Sahil and Samiksha, 2020)

2.2 Overview of Quality, Quality Control and Quality Assurance

2.2.1 Definition of Quality

Quality is a distinguishing characteristic of products or services, which satisfy the customer. Quality is a universal phenomenon that has been a matter of great concern throughout recorded history. It was always the determination of builders and makers of products to ensure that their finished products meet the customer's desire.

- Meeting the customer's need
- Fitness for use
- Conforming requirement (Razzak, 2011)

Quality is usually referred to as the technical specification of the scope of work: in most traditional contracts quality is a constraint and the contractor is responsible for the delivery to the owner of the specified level of quality in terms of construction materials, finishing, equipment, and resources used in the building process. (Marco, 2018)

2.2.2 Quality control

Quality control is a process that compares actual quality performance with goals, identifying appropriate actions in response to shortfalls. It monitors project results to ensure compliance with standards and identifies solutions to unsatisfactory performance, aiming to improve quality and manage scope, budget, and schedule. (PM4DEV, 2008). In quality control, specific project results are monitored to determine if they meet relevant quality standards, and ways to eliminate causes of unsatisfactory performance are identified. (Marco, 2018)

According to (Razzak, 2011)a good quality control system will The process involves selecting control points, setting standards, establishing measurement methods, comparing results to quality standards, reverting nonconforming processes, monitoring and calibrating devices, and providing detailed documentation.

2.2.3 Quality control tools and techniques

INSPECTION is the process of looking over a work product to make sure it complies with established guidelines. Inspections can be carried out at any level, and the results typically

include measurements. One may examine the outcomes of a particular task or the project's finished product. The terms reviews, walkthroughs, audits, and peer reviews can all refer to inspections. These phrases have specialized and limited meanings in certain application areas. Inspections are also employed to confirm fault corrections. (PMBOK guide, 2013)

An inspection is a formal assessment of both the process's overall quality and the quality of a subset of the completed product. Even though there are still little finishing touches to be completed, a typical inspection is the major completion, which serves as a pre-finish validation gate enabling for the construction facility to be commissioned for occupation. A multi-phase formal process with legal and contractual significance is the major completion inspection. Typically, the purpose of an inspection is to review a punch list of unresolved concerns and determine when those tasks will be finished. (Marco, 2018)

A construction site inspection occur during

Pre-construction

Construction site inspections, typically conducted during the construction phase, can begin in pre-construction, assessing property condition and neighboring areas, and checking planning permissions, conditions, and obligations with local authorities.

During the project

Construction site inspections are crucial for assessing project quality, focusing on scope, budget, and schedule, as these are the primary measures during a construction project.

Project closeout

The final inspection and construction closeout process involves site walkthroughs to confirm completion of contract documents, submittals, lien waivers, warranties, close-out documentation, manuals, and as-built, ensuring building readiness for occupancy. (PM4DEV, 2008)

2.2.3 Quality assurance

Quality assurance is all the structured and systematic actions carried out inside the quality system to guarantee that the project will meet the applicable quality requirements (Pravin.M and Jalindar.P, 2015) Quality assurance is a crucial process that confirms product quality to

stakeholders, ensuring it meets needs and expectations. It involves regular evaluation of project performance during the implementation phase to ensure the project meets defined quality standards. The process of providing evidence-based confirmation to donors, beneficiaries, organization management, and other stakeholders that a product meets their needs is known as quality assurance. Anticipations as well as additional specifications. It guarantees that process and procedure tools are present and functional, and that safety measures are in place to guarantee that the required standards of quality will be met in order to generate high-quality products. Quality assurance, which takes place during the project's implementation phase, entails routinely assessing the project's overall performance to give assurance that it will meet the quality criteria it has set. (PM4DEV, 2008)

According to (Pheng, L. S., & Teo, J. A., 2004)a good quality assurance system should identify objectives, be multifunctional, prevention-oriented, plan for continuous improvement, establish performance measures, and include quality audits.

2.2.4 Quality Control VS Quality Assurance

Quality control, which is carried out after the conclusion of a process or activity to confirm that quality requirements have been fulfilled, is sometimes confused with quality assurance. Although it can point up issues and offer solutions, quality control cannot produce quality on its own. Quality assurance, on the other hand, is a methodical process for achieving quality standards. Planning for quality assurance should begin early in a project and necessary steps should be done at each level. Sadly, far too many development projects are carried out without a quality assurance strategy, and as a result, they frequently fall short of the donors' and recipients' high standards for quality. The project must be able to show regular adherence to quality standards to avoid issues. Lack of understanding of project quality assurance and project quality control leads to insufficient data collection, poor execution, and mismanagement of human resources, resulting in insufficient customer satisfaction measurement and product testing (Harris, McCaffer, & Edum-Fotwe, 2013)

2.3 Selected Finishing works in construction projects

The process of bringing a building project to completion, known as 'finishing work', plays a crucial role in the construction field. It not only adds the final touches that elevate the aesthetic

value of the structure but also ensures that the building is functional, durable, and weatherproof. Finishing of a building can be divided into several sections such as:

- Plastering finishing
- Floor finishing
- Wall finishing

Plastering

Is long-lasting surface; different surfaces of the structure are covered with a plastic material, such as cement mortar, lime mortar, composite mortar, etc. Plastering offers a covering that protects against atmospheric impacts while also hiding subpar materials and workmanship. Additionally, it serves as a foundation for other decorative treatments like painting or whitewashing. Cement, lime, and gypsum are examples of flexible materials that are used to treat surfaces inside or outside of buildings for both decorative and utilitarian purposes. Protecting the building structure, boosting fire resistance, offering durability, and enhancing thermal insulation are the main purposes. (Ariffin,Haron, Subramanian, Hamzah, & Rubani, 2018)

Floor finishing

Flooring is defined as materials used to make or cover a floor material like wood tiles are used to create or cover floors, with the finish ensuring taste, comfort, and aesthetics. Various materials like asphalt, concrete, cork, linoleum, magnetite, mud, stone, terrazzo concrete, tile, and timber are used in buildings. These materials ensure durability and aesthetics while being moderately cost-effective. The use of plastic (PVC)-rubber is also common, combining raw rubber with pigment and sulfur. (Ariffin,Haron, Subramanian, Hamzah, & Rubani, 2018).

2.3 Empirical Literature Review

According to (Onoh.F, Emenike, Orji, and Obodoh, 2019) quality management is a critical component that should be taken seriously in any building project. The study emphasized the importance of using a comprehensive project management approach to meet and exceed project requirements, increase customer satisfaction, deliver value for money, and ensure suitability for the intended use. It highlighted the need for an efficient and well-organized quality management strategy to consistently identify and address quality-related issues during the construction phase.

However, the study, which focused on construction professionals in Enugu State, Nigeria, may have limited generalizability due to its specific focus. Additionally, the lack of a detailed explanation of the specific methodology used for the field survey and analysis presents a methodological gap, and the study may lack an in-depth analysis of the long-term effects of quality management practices on project delivery.

(Bouzidi, Louafi, and Saighi, 2023)Found that Algerian construction projects suffer from a lack of sufficient knowledge and awareness about Quality Management Systems (QMS). Only 50 out of 308 respondents had experience in implementing QMS rules, with engineers being the least involved group at only 6%. There was no organized system for QMS operation in small and medium-sized projects, and no mandatory provisions for firm compliance. The findings suggest the need for improved knowledge distribution, increased engagement of key stakeholders, structured systems, and regulatory mechanisms. The study acknowledges limitations such as a small sample size and low diversity, affecting the generalizability of the findings. It suggests reviewing construction project contracts, including contemporary QMS tools, and offering workshops to improve industry awareness. The primarily descriptive research methodology lacks in-depth qualitative analysis or case studies to provide a richer understanding of implementation challenges and successes in Algerian construction projects.

According to (Muhwezi Lawrence,Baguma Andrew,Mubiru Joel, 2021) the main obstacles to quality management in building construction firms in Uganda include poor designs, inadequate equipment, insufficient project knowledge, poor project scheduling, unrealistic deadlines, and weak health standards at construction sites, client bureaucracy, poor estimates, and clients setting unrealistic deadlines. These issues greatly impact the effective planning and execution of building projects in Uganda. The study specifically focused on the Kamwenge district, which may not reflect the quality management practices of building construction firms in other districts or regions of Uganda. The primarily descriptive design may limit the depth of analysis and understanding of the factors influencing quality management practices. The study did not explore the perspectives of other stakeholders, such as clients, contractors, and regulatory bodies, nor did it address the potential impact of external factors like economic conditions, political stability, and technological advancements on quality management practices in the construction industry.

(Baba-Girei, 2021) reported that construction firms in Abuja have low ISO compliance, affecting site management, design reputation, and planning. Factors hindering implementation include mismatched tendering procedures, design complexity, poor quality performance, and low teamwork. The study recommended measures such as government enforcement, training, and incorporating quality assurance and control standards throughout the project design and production phases. However, the study's limitations include its geographical scope, potential sampling bias, reliance on questionnaire administration, subjectivity, lack of longitudinal data, and absence of comparative analysis. The study was limited to Abuja and Nigeria, potentially limiting its generalizability. The use of simple random sampling may introduce biases, and the lack of longitudinal data could limit the understanding of quality assurance and control practices in construction projects. Comparative analysis with other regions could provide valuable insights.

According to (Muhammad Marafa and Harkamal Singh, 2023) quality control is a management activity in construction projects that sets objectives to achieve performance and cost requirements. It is essential for project managers to examine factors influencing product or service quality to achieve top quality at the lowest cost. Quality assurance and control are essential for construction projects to enhance standards and consistency. The research emphasizes the importance of quality planning, training, clear decisions, regular monitoring, rapid inspection of completed tasks, and documentation of resolutions, presumptions, and findings. Proactive processes are key to quality assurance. The research identified funding-related issues, duration-related issues, and equipment/machinery-related issues as the most critical factors impacting construction project quality.

According to (Mikias, 2023)research on the use of quality management tools, material and equipment quality control, and the aid of top management to employees was not adequate. The company also did not provide quality management system (QMS) training for all employees, and there was a lack of continuous supervision and a trend of giving swift solutions for different quality-related challenges. The research was limited by a constrained budget and relied on qualitative exploration, potentially limiting its generalizability. The inadequate practice of QMS led to challenges in project execution and increased uncertainty in activities. The study revealed

a discrepancy between the use of ISO 9001 QMS and respondents' perceptions of its implementation, suggesting a potential gap in documentation and procedures.

The study by (Nega, 2020) highlights factors affecting Addis Ababa's construction projects, including poor management, inadequate funding, skilled labor shortage, poor materials, and inadequate monitoring. It recommends collaboration among stakeholders and government support for industry improvement. The research paper focuses on identifying factors affecting the quality of construction projects through quantitative methods like questionnaire surveys and correlation analysis. However, there is a gap in the methodological approach, as qualitative research methods could have provided richer insights into the experiences and perspectives of stakeholders involved in construction projects. This could have uncovered nuanced factors that may not be captured through quantitative surveys, enhancing the understanding of quality issues in construction projects. The paper also did not explore the long-term implications of poor-quality construction projects on stakeholders, communities, and the environment.

(Bekele,Quezon, Woysa, 2021)Emphasize the importance of testing and inspecting materials to improve performance Contractors and consultants played a critical role in managing materials and labor to achieve quality projects. Factors included materials testing, design, financial, building regulations, site access, site staff, weather conditions, technical issues, and government procurement laws.

(Fekade, 2020) Revealed insights into the actual implementation of quality control and quality assurance practices in the finishing works of public building projects in Addis Ababa . It identified specific quality problems in plastering, floor, and wall finishing activities, as well as malpractices related to document preparation and variation works. The findings provided a basis for recommendations to improve quality control and assurance in construction projects. The research paper does not provide a detailed explanation of the specific methodologies used for data collection, such as the number of interviews conducted or the specific criteria for selecting public building projects in Addis Ababa for investigation. The research does not discuss the sample size or representativeness of the projects studied, which may limit the generalizability of the findings. The research paper does not provide a comprehensive analysis of the financial implications of implementing good quality control and quality assurance systems in finishing works. The paper does not explore the potential challenges or barriers to implementing effective

quality control and quality assurance systems in the context of public building projects in Addis Ababa. The research paper does not discuss the potential limitations or biases in the data collected through interviews and site visits, which may affect the validity of the findings. This research focuses only on public buildings in Addis Ababa, not private ones.

Most of the existing research focused on the overall quality management practices of buildings. However, finishing works are crucial for a building's appearance, functionality, and safety. Despite this, most studies are not specifically focused on finishing work quality. Therefore, this research aims to assess the quality assurance and quality control practices in finishing work at Noah Real Estate.

2.4. Conceptual Framework

The conceptual framework diagram illustrates the relationship between various factors influencing the quality of finishing work in construction projects, focusing on dependent variables such as quality control, quality assurance, and finishing work .poor design, inadequate materials, poor project scheduling ,financial constraints, and lack of supervision are identified as key independent variables that negatively impact these dependent variables. Quality control refers to the procedures and measures taken to ensure that project outputs meet established standards, including inspections, testing, and corrective actions. Quality assurance is a systematic process aimed at achieving quality standards throughout the project lifecycle, involving early planning and continuous quality procedures. The quality of finishing work, which affects client satisfaction and the projects overall aesthetics and functionality, reflects the successful implementation of quality control and assurance measures. Understanding these relationships is crucial for developing strategies to mitigate issues related to design flaws, material deficiencies, scheduling problems, budget limitations, and inadequate supervision, ultimately improving project quality.

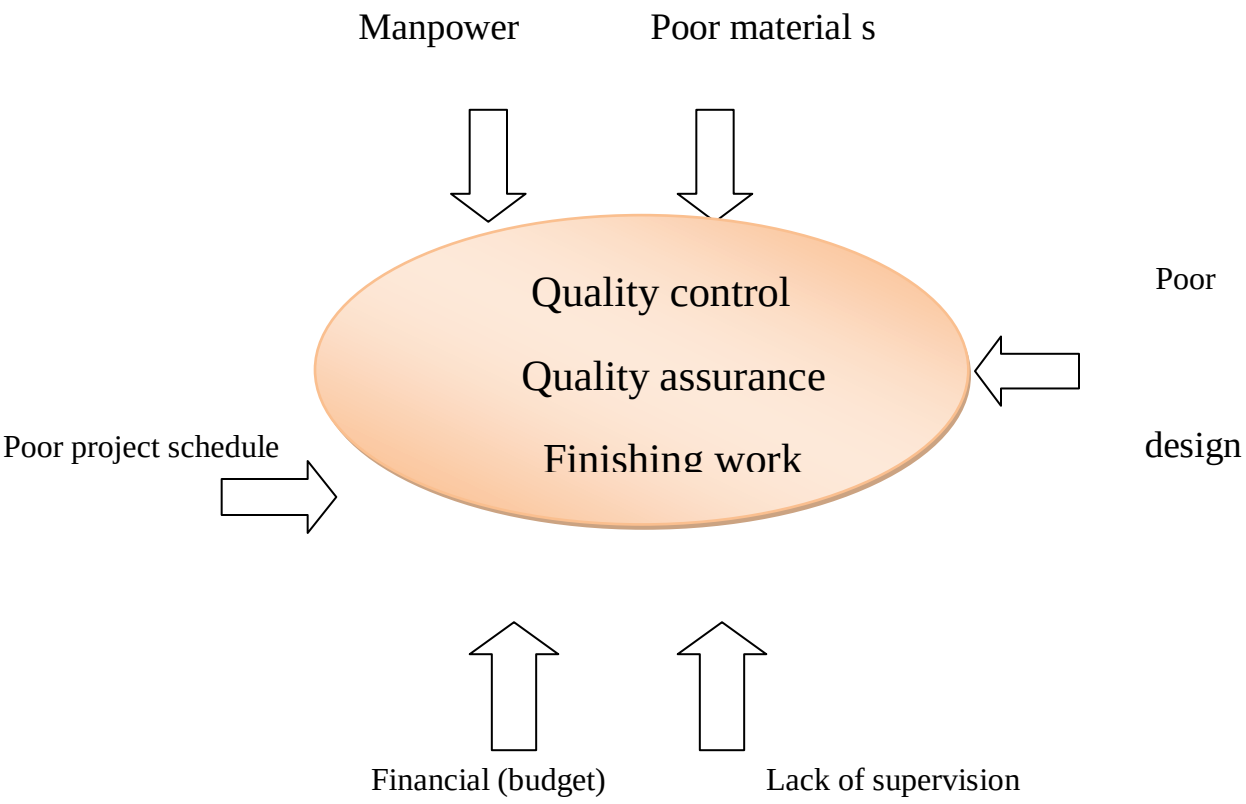

Figure 1 Conceptual frame works (researcher own source)

CHAPTER THREE

RESERCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter provides an explanation of the study's methodology. It covers various aspects such as the research approach, research design, population and sampling, data collection instruments, reliability and validity tests, data analysis techniques, and ethical considerations.

3.2 Description of the Study Area

The study was conducted within the operational scope of Noah Real Estate, focusing on Privet Building Construction projects. Noah Real Estate is known for its diverse portfolio of construction projects, and this study was specifically examine the finishing works quality control and assurance processes within selected projects.

3.3 Research Design and Research Approach

This study utilized a mixed-use research design, integrating both quantitative and qualitative data to provide a comprehensive analysis of quality control and quality assurance practices in private building construction projects at Noah Real Estate. Quantitative data were collected through a questionnaire survey, while qualitative insights were gathered from interviews and observation ensuring a well-rounded perspective. The descriptive research methodology systematically examined the practices in question. Primary data was obtained through questionnaire, interviews and observational techniques, while secondary data was gathered from relevant literature, thesis, website, and documents. A purposive sampling technique was employed to select a representative sample. The collected data were analyzed using mean and standard deviation analysis techniques to draw meaningful conclusions.

3.4 Population and sampling

The target population for this study was one of the real estate construction firms located in Addis Ababa. This real estate company was selected using purposive sampling techniques from a list of real estate companies that had implemented quality control and quality assurance in their organizational systems. The company is well organized and runs projects throughout most of the city. The population size for this study was a census of all permanent employees of Noah Real Estate, ensuring comprehensive coverage of the relevant personnel. A total of 50 individuals

were chosen purposively. This selection process was designed to achieve a balance between the need for a manageable sample size and the requirement for a representative sample that captures the range of experiences and perspectives within the organization.

This approach ensures that the selected participants are not only knowledgeable about the quality control and quality assurance processes but also have the authority and influence to provide meaningful insights into the implementation and effectiveness of these practices. The participants included professionals such as project managers, engineers, contractors, supervisors, and quality control teams, all selected purposively to provide diverse and authoritative perspectives on the company's quality management practices.

3.5 Sampling Methods

A sample is a portion of the research that had been chosen by the researcher from the overall population under investigation (Symeou, 2008) the study sample size includes construction professionals who are responsible for quality control and assurance in Noah real estate. A total of six sites are under construction at Noah Real Estate. Four sites were chosen purposively because they are in the finishing stage. From this site, the professionals who had direct or indirect relationships with quality management were chosen which had the following positions: project manager, site engineer, office engineer, quality control and quality assurance manager, contractor, supervisor, consultant, and general Forman. These sets of people were chosen to obtain adequate information about their organization's quality control and assurance management. These 50 respondents were drawn from the population of the four sites this sample size allows for a comprehensive assessment of varied perspectives and practices, minimizing bias and enhancing the validity of the study's findings. It strikes the balance between depth of analysis and practical feasibility within the organizational context.

3.6 Data Collection Tools / Instruments

On-Site Observations: to directly observe finishing works in progress at construction sites within Noah Real Estate. This was allowed the researcher to assess whether the documented quality control and assurance procedures are being implemented effectively in practice. On-site observations provide real-time insights into the actual execution of quality practices.

Interviews: Interviews was conducted with key personnel involved in quality control and

assurance processes, such as project managers, site engineers, and quality inspectors. These interviews provide qualitative data on their perspectives, experiences, and challenges related to quality practices within Noah Real Estate.

Questionnaires: Questionnaires are a particularly suitable tool for gaining quantitative data but can also be used for qualitative data. This method of data collection is usually called a survey. Using a questionnaire enables you to organize the questions and receive replies without actually having to talk to every respondent. As a method of data collection, the questionnaire is a very flexible tool that has the advantages of having a structured format, being easy and convenient for respondents, and being cheap and quick. Questionnaires provide a standardized way of collecting data from a large number of participants. (Nicholas walliman , 2011)

Questionnaires were distributed to construction workers and quality control personnel to gather quantitative data on their understanding of quality standards and their perception of the effectiveness of existing quality control measures.

3.7 Data Analysis

The Statistical Package for Social Sciences (SPSS) version 29.0 program was used to analyze the questionnaire data. Descriptive data analysis was applied. The gathered data was described and summarized using the descriptive method of analysis. (Anthony J. Onwuegbuzie & Julie P. Combs , 2011) The five point Likert's scale (1, 2, 3, 4 and 5) was used to rate the mean score, and standard deviation. The study interpretation of the data represented from 1-1.80 represents (strongly disagree), from 1.81-2.60 represents (disagree), from 2.61-3.40 represents (neutral), from 3.41- 4.20 represents (agree) and from 4.21-5.00 represents (strongly agree). This helped to assess the quality control and quality assurance practices in selected finishing works, such as plastering, wall and floor, of privet building construction projects in Noah Real Estate.

3.8 Reliability and Validity

Reliability is the degree to which a measure produces results that are error-free and consistent. The Cronbach's alpha test was used in this study to assess the reliability of the quantitative data and the internal consistency of the questionnaire results. Using Cronbach's alpha test, all measuring scales were compared to determine if they measured the same construct reliability (Pallant, 2020).

According to Field (2009), the result we get by using Cronbach's is 0.7 and above, which is considered reliable. Values between 0.5 and 0.7 are also considered reliable; values below 0.5 are less reliable. The validity tests evaluate how well the research tool accomplishes the goal for which it was created. (Leedy and Ormrod, 2005)

The reliability-measuring scale of cronbach's alpha was applied to the pilot test questionnaires distributed to ten respondents. To determine if the question utilized in the research study is internally consistent. Additionally, the study's outcome is acceptable according to the literature cited above.

Table 1.1 reliability

Reliability Statistics		
Category	Cronbach's Alpha	N of Items
Quality Control and Quality Assurance Practices	0.969	8
Factors while using quality control and quality assurance systems	0.966	6
Quality control and assurance implementation	0.959	9
Quality management challenges	0.850	7

Source: survey result (2024)

3.9 Ethical Considerations

This study carefully adhered to ethical standards by obtaining informed consent from all participants, ensuring they were fully aware of the study's purpose, procedures, potential risks, and benefits. Participants' confidentiality and anonymity were maintained by removing personal identifiers and securely storing data accessible only to the researcher. Additionally, participants were informed of their right to withdraw from the study at any time without any negative consequences. Throughout the research process, the study complied with recognized ethical guidelines to protect the integrity of the research and the dignity of the participants.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1. Introduction

In this chapter, the results and main findings from the data collected through questionnaires and interviews are discussed and interpreted to achieve the research objectives. A total of 50 questionnaires were distributed, and 45 were successfully returned by the respondents, resulting in a response rate of 90%. This high response rate is considered adequate for conducting the study for several reasons. Firstly, a response rate of 90% significantly reduces the potential for non-response bias, enhancing the reliability and validity of the findings.hig response rates are crucial in ensuring that the sample accurately reflects the population of interest, making it more likely that the results can be generalized. Secondly, the literature suggests that response rates above 70-80% are generally acceptable in survey research, for that reason a 90% response rate exceeds this benchmark and adds strength to the study (Baruch & Holtom, 2008) .

The data were analyzed using the statistical Package for Social Sciences (SPSS) version 29.0, enabling comprehensive statistical analysis to derive meaningful insights from the collected data.

4.2 Background Analysis of Respondents

4.2.1 Gender of respondent

The sample consists of 45 respondents. The data shows that 66.7% of respondents are male and 33.3% female, which implies that the project has a significant male-dominated workforce.

Table 4.1 Gender of respondent

Gender of respondent	Frequency	Percent
Male	30	66.7
Female	15	33.3
Total	45	100.0

Source: Survey (2024)

4.2.2 Age of Respondent

According to the data the majority of respondents 44.4% are in the age (20-30) age group, followed by the (31-40) age group 37.8%.this shows that the project has significant number of

young professionals. This demographic composition suggests opportunities for innovation and technological adoption, as well as a focus on nurturing talent through career development initiatives. It also underscores the importance of strategic succession planning to maintain continuity and leadership within Noah Real Estate's workforce.

Table 4.2 Age of respondent

Age of respondent	Frequency	Percent
20-30	20	44.4
31-40	17	37.8
41-50	7	15.6
Above 51	1	2.2
Total	45	100

Source: Survey (2024)

4.2.3 Educational Background

The respondent educational background analysis shows that 64.4%of respondents have a BA/BSc degree, 31.1%have an MA/MSc, and 4.4% have a diploma. This indicates large numbers of respondents are professionals with higher education qualifications this study are considered that they have better understanding to give accurate answer to the questionnaire.

Table 4.3 Educational Background

Educational level	Frequency	Percent
BA/BSc Degree	29	64.4%
MA/MSc	14	31.1%
Diploma	2	4.4%
Total	45	100%

Source: Survey (2024)

4.2.4 Work Experience

This data reveals that the majority of respondents 53.3% have between (6-10years) of experience in their current positions, suggesting a good level of familiarity and expertise in their respective

job functions. The presence of newer hires 22.2 %(under 5 years) and longer-term employees 13.4 %(11-25 years) provide a balance of perspectives and insights.

Table 4.4 work experience

Service year in the Company	Frequency	Percent	Work experience in the current position	Frequency	Percent
1-5	10	22.2%	under 5	13	28.9%
6-10	24	53.3%	6-10	21	46.7%
11-15	9	20.0%	11-20	10	22.2%
16-25	2	4.4%	21-30	1	2.2%
Total	45	100%	Total	45	100%

Source: survey (2024)

4.2.5 Job title in the organization/company

The data shows that most of the respondent's job titles are site engineer/office engineer (31.1%). supervisor (26.7%), project manager (13.3%), general foreman (11.1%), contractor (8.9%), consultant (6.7%), quality control and quality assurance manager (2.2%). This suggests that the respondent has a diverse range of job roles and titles. It helps to get valuable information on quality control and quality assurance practice in Noah real estate

Table 4.6 job title in the organization/company

Job title in the organization	Frequency	Percent
project manager	6	13.3
Contractor	4	8.9
quality control and quality assurance manager	1	2.2
site engineer/office engineer	14	31.1
Supervisor	12	26.7
Consultant	3	6.7
general foreman	5	11.1
Total	45	100%

Source: survey (2024)

The data shows that the most common job titles are site engineer/office engineer (31.1%), supervisor (26.7%), project manager (13.3%), general foreman (11.1%), consultant (8.9%), contractor (6.7%), and quality control and quality assurance manager (2.2%). This suggests that the project has a diverse range of job roles and titles, with a significant number of professionals in engineering and management positions. This finding could be relevant in understanding the project's workforce dynamics and the potential impact on the project's success.

4.3 Descriptive analysis of variables

Table 4.7 Basic information about checking quality control and assurance practices

No	Statement	Response	Frequency	Percent
1	Does your organization have a quality management system?	Yes	39	86.7
		No	6	13.3
		Total	45	100
2	The organization has a responsible department for quality control and quality assurance.	Yes	36	80
		No	9	20
		Total	45	100
3	Are there documented quality control plans specifically addressing plastering, floor, and wall	Yes	35	77.8
		No	10	22.2

	finishing works in Noah Real Estate projects?	Total	45	100

Source: survey (2024)

The data presented in Table 4.7 provides insights into the basic information regarding the quality control and assurance practices within the organizations represented by the survey respondents.

The first question, examines whether the respondents' organization has a quality management system in place. The data shows that the majority, 86.7%, of the respondents indicate that their organization does have a quality management system. This suggests a high level of awareness and implementation of formal quality management practices within the organization. (Wenzhe.T et.al., 2009) have emphasized the importance of implementing comprehensive quality management frameworks in construction organizations to ensure consistent quality and project success.

This implies the presence of a quality management system provides a structured approach to quality control and quality assurance, which can lead to more effective identification and resolution of quality issues, as well as the implementation of continuous improvement initiatives. The high percentage of organizations with a quality management system may be attributed to the construction industry, which increase customer satisfaction and enhance quality and productivity.

The second question, explores whether the organizations have a dedicated department responsible for quality control and quality assurance. The results reveal that 80% of the respondents confirm the presence of such a specialized department within their companies. This indicates a strong organizational focus in quality management. According to (Pheng, L. S., & Teo, J. A., 2004) highlighted the importance of having a designated quality management team or department to oversee and coordinate quality-related activities throughout the construction project lifecycle.

The presence of a responsible department for quality control and quality assurance suggests that the organization has a structured approach to managing quality, with clear roles and responsibilities assigned to ensure the effective implementation of quality practices. The establishment of a dedicated quality management department may be driven by the organization's recognition of the strategic importance of quality control and assurance, as well as the need to maintain consistent quality standards across their construction projects.

The third question is the availability of documented quality control plans specifically addressing the plastering, floor, and wall finishing works in the Noah Real Estate projects. The data shows that 77.8% of the respondents affirm the existence of these documented plans.

The importance of developing and implementing comprehensive quality control plans, particularly for critical project activities such as finishing works, to ensure consistent quality and minimize defects. (Pravin.M and Jalindar.P, 2015).The presence of documented quality control plans for finishing works suggests that the organization has a structured approach to managing quality during these crucial stages of the construction process. This can lead to more effective identification and resolution of quality issues, as well as the implementation of corrective actions. The high percentage of organizations with documented quality control plans for finishing works may be attributed to the organization's recognition of the importance of quality management in these critical areas, as well as the influence of industry standards or regulatory requirements.

Overall, the descriptive analysis of the variables indicates a relatively strong foundation for quality management practices within the organization, with the majority of respondents reporting the presence of a quality management system, a dedicated quality management department, and documented quality control plans for finishing works. These findings suggest that the organization has recognized the importance of quality control and quality assurance, which can contribute to improved project outcomes and enhanced client satisfaction. However, the analysis also reveals areas for potential improvement, such as further enhancing the implementation and effectiveness of these quality management practices, which can be explored through more in-depth analysis and targeted interventions.

4.5 Quality control and Assurance practice

Table 8 Descriptive Statistics of Quality control practice in Noah real estate

Descriptive Statistics			
	N	Mean	Std. Deviation
The organization has standard specifications and checklists for controlling the quality of finishing	45	3.96	.952

works.			
The supervisor properly controls the quality of work as per the specifications and drawings.	45	3.98	.965
The concerned bodies frequently check whether the executed work complies with the approved materials.	45	3.64	.981
Quality control inspections during plastering, floor and wall finishing works are conducted at appropriate intervals.	45	3.49	.968
Defects in plastering, floor, and wall finishing work are promptly addressed.	45	3.73	.986
Valid N (listwise)	45		

Source: survey 2(2024)

The study interpretation of the data represented from 1-1.80 represents (strongly disagree), from 1.81-2.60 represents (disagree), from 2.61-3.40 represents (neutral), from 3.41- 4.20 represents (agree), and from 4.21-5.00 represents (strongly agree). The descriptive statistics presented in the table provide insights into various aspects of the quality control and assurance practices related to the plastering, floor, and wall finishing works in the Noah Real Estate projects.

The first variable, "The organization has standard specifications and checklists for controlling the quality of finishing works," has a mean score of 3.96 and a standard deviation of 0.952. This suggests that, on average, the respondents agree that their organization has established standard specifications and checklists for controlling the quality of finishing works. The relatively low standard deviation indicates a relatively consistent perception among the respondents regarding the availability of these quality control tools. The interviewee also mentioned that one of the

quality management tools the company uses is a checklist. (Liyin Shen,Jianli Hao, 2007)Emphasized the importance of establishing and using standardized quality control procedures, including the use of checklists and specifications, to ensure consistent quality in construction projects.

The use of standard specifications and checklists for finishing works suggests that the organization has a structured approach to quality control, which can lead to more consistent quality, reduced defects, and improved customer satisfaction. The high level of agreement on the use of standard specifications and checklists is attributed to the organization's commitment to quality management, the influence of industry standards, or the recognition of the benefits of standardized quality control practices.

The second variable, "The supervisor properly controls the quality of work as per the specifications and drawings," has a mean score of 3.98 and a standard deviation of 0.965. This implies that a high level of agreement that the supervisors have proper control over of quality of work as per the specifications and drawings. The critical role of supervisors in ensures quality control and assurance throughout the construction process. According to (Dalibi, 2016) every project phase's construction activities and tasks can only be completed by following the project documents and, consequently, by having sufficient supervision.

The effective control of work quality by the supervisor suggests that the organization has a strong emphasis on quality management, with clear expectations and oversight from the supervisory level. This can contribute to the timely identification and resolution of quality issues. According to the interviewee and on site observation the high level of supervisor control might be a result of the organization's training and development initiatives, clear quality management policies, or the supervisor's own expertise and commitment to quality.

The third variable, "The concerned bodies frequently check whether the executed work complies with the approved materials," has a mean score of 3.64 and a standard deviation of 0.981. This indicates that the respondents moderately agree that the relevant authorities or departments regularly verify the compliance of the executed work with the approved materials. The relatively lower mean score compared to other variables may be due to challenges in coordinating the

various parties involved, the availability of resources for quality inspections, or the need for more robust quality control procedures.

(Bekele,Quezon, Woysa, 2021)Said Ensuring the use of approved materials and verifying their compliance with specifications is a fundamental aspect of quality control in construction projects. The moderate level of agreement on the checking of material compliance suggests that the organization has implemented quality control measures, but there may be room for improvement in the frequency and effectiveness of these checks.

The fourth variable, "Quality control inspections during plastering, and floor and wall finishing works are conducted at appropriate intervals," has a mean score of 3.49 and a standard deviation of 0.968. This suggests that the respondents tend to agree, though with slightly less agreement, that the quality control inspections for the selected finishing work components are carried out at suitable intervals. (Fekade, 2020) Has emphasized the importance of conducting quality control inspections at critical stages of the construction process, particularly for finishing works, to ensure compliance with specifications and identify and address quality issues.

The moderate level of agreement on the conduct of quality control inspections at appropriate intervals suggests that the organization has some quality control measures in place, but there may be opportunities to enhance the frequency and effectiveness of these inspections to improve overall quality management. The relatively lower mean score compared to other variables may be due to resource constraints, the need for more robust quality control procedures, or the challenge of coordinating inspections with the project timeline.

As a final point the fifth variable, "Defects in plastering, floor, and wall finishing work are promptly addressed," has a mean score of 3.73 and a standard deviation of 0.986. This implies that the respondents generally agree that any defects identified in the finishing works are addressed in a timely manner, though the slightly higher standard deviation indicates a slightly more varied perception among the respondents regarding the promptness of addressing such defects. The researcher identifies by interviewee that Noah real estate address any issues or defects identified during quality inspections.

(Damilola, 2022) has emphasized the importance of identifying and addressing defects in a timely manner to minimize the impact on the overall project quality and customer satisfaction.

The relatively lower mean score compared to other variables is due to challenges in identifying and addressing defects, resource constraints, or the need for more strong quality control and quality assurance procedures.

Overall, the descriptive analysis of the quality control practices in Noah Real Estate indicates a relatively strong foundation, with the organization demonstrating a focus on standardized quality control procedures, supervisor oversight, and the checking of material compliance. However, the analysis also reveals opportunities for improvement, particularly in the areas of quality control inspections and the prompt addressing of defects. These findings suggest that the organization should consider enhancing its quality management practices, such as by increasing the frequency and effectiveness of quality control inspections, improving coordination among various stakeholders, and strengthening the responsiveness to quality issues. Addressing these areas can contribute to more consistent quality, reduced defects, and enhanced customer satisfaction.

4.6 Quality Assurance practice

Table 9 Descriptive Statistics of Quality assurance practice in Noah real estate

Descriptive Statistics			
	N	Mean	Std. Deviation
The specifications in the contract provide clear descriptions.	45	3.78	.927
The concerned professionals approve materials as per certification and maintain quality assurance properly.	45	3.84	.999
Budgeting practices support the implementation of quality assurance measures in plastering, floor, and wall finishing works.	45	3.49	1.014

Valid N (listwise)	45		

The descriptive statistics presented in the table provide insights into several aspects of the quality assurance practices employed in the Noah real estate projects.

The first variable, "The specifications in the contract provide clear descriptions," has a mean score of 3.78 and a standard deviation of 0.927. This suggests that, on average, the respondents agree that the contract specifications provide clear and comprehensive descriptions. The relatively low standard deviation indicates a high level of consensus among the respondents regarding the clarity of the contractual specifications. The importance of clear and comprehensive contract specifications in ensuring quality assurance and minimizing construction defects

The moderate level of agreement on the clarity of contract specifications suggests that the organization has made efforts to provide clear guidelines and requirements, which can contribute to better alignment between the organization and the contractors/subcontractors in terms of quality expectations and standards.

The relatively lower mean score compared to other variables possibly due to the complexity of the project, the need for more detailed or specific specifications, or challenges in communicating and articulating the contract requirements effectively.

The second variable, "The concerned professionals approve materials as per certification and maintain quality assurance properly," has a mean score of 3.84 and a standard deviation of 0.999. This implies that the respondents generally agree that the relevant professionals effectively approve the materials in accordance with the required certifications and maintain appropriate quality assurance practices. The standard deviation of less than 1.0 suggests a relatively consistent perception among the respondents on this aspect of quality assurance.

The crucial role of competent professionals in implementing and monitoring quality assurance processes, including the approval of materials and the maintenance of quality standards (Bekele,Quezon, Woysa, 2021)

Level of agreement on the approval and maintenance of quality assurance by professionals suggests that the organization has measures in place to ensure the involvement of qualified personnel in quality management, which can contribute to the overall quality of the project.
The relatively lower mean score compared to other variables perhaps due to challenges in coordinating the various professional parties, resource constraints, or the need for more comprehensive quality assurance procedures.

The third variable, "Budgeting practices support the implementation of quality assurance measures in plastering, floor, and wall finishing works," has a mean score of 3.49 and a standard deviation of 1.014. This indicates that the respondents moderately agree that the budgeting practices for the projects enable the implementation of quality assurance measures for the critical finishing work components. The slightly higher standard deviation compared to the previous variables suggests a slightly more varied perception among the respondents regarding the adequacy of budgetary support for quality assurance.

The importance of adequate budgeting and resource allocation for the effective implementation of quality assurance measures in construction projects. The moderate level of agreement on the supportiveness of budgeting practices for quality assurance implementation suggests that the organization may face some resource constraints or challenges in allocating sufficient funds for quality-related activities, which could potentially impact the overall effectiveness of the quality assurance program. The relatively lower mean score compared to other variables perhaps due to budget limitations, competing priorities within the organization, or the need for more comprehensive cost planning and allocation for quality assurance measures.

Overall, the descriptive analysis of the quality assurance practices in Noah Real Estate indicates a moderately strong foundation, with the organization demonstrating a focus on clear contract specifications, the involvement of qualified professionals in quality assurance, and the allocation of resources for quality-related activities. However, the analysis also reveals opportunities for improvement, particularly in the areas of contract specification clarity and the supportiveness of budgeting practices for quality assurance implementation. These findings suggest that the organization should consider enhancing its quality assurance processes, such as by improving the

clarity and comprehensiveness of contract specifications, ensuring the continuous involvement of competent professionals, and allocating sufficient resources for quality assurance measures. Addressing these areas can contribute to better alignment with contractors, more effective quality assurance implementation, and ultimately, improved project quality and customer satisfaction.

4.7 Noah real estate consideration factors while using quality assurance systems.

Table: 10 factor while using quality assurance

Descriptive Statistics			
	N	Mean	Std. Deviation
Selects the appropriate quality management system requirements for each contract.	45	3.76	.908
Evaluate and select workers on their ability to satisfy specified requirements.	45	3.82	.936
Appropriate checking, measurement, or testing of products and keeping proper records.	45	3.80	.894
Valid N (listwise)	45		

The descriptive statistics provided in Table 10 highlight the key factors that Noah Real Estate considers when using quality assurance systems for their projects.

The first factor, "Selects the appropriate quality management system requirements for each contract," has a mean score of 3.76 and a standard deviation of 0.908. This suggests that, on average, the respondents agree that Noah Real Estate effectively selects the appropriate quality management system requirements based on the specific needs and requirements of each contract. The relatively low standard deviation indicates a high level of agreement among the respondents regarding this practice.

The level of agreement on selecting appropriate quality management system requirements suggests that the organization has made efforts to tailor its quality assurance approach to the specific needs of each contract, which can contribute to the effectiveness of the quality assurance program and the overall project outcomes. The comparatively lower mean score compared to other variables may be due to the complexity of the projects; the need for more specialized or customized quality management systems, or challenges in accurately identifying and addressing the unique requirements of each contract.

The second factor, "Evaluate and select workers on their ability to satisfy specified requirements," has a mean score of 3.82 and a standard deviation of 0.936. This implies that the respondents generally agree that Noah Real Estate evaluates and selects workers based on their demonstrated ability to meet the specified quality requirements for the projects. The standard deviation of less than 1.0 suggests a relatively reliable perception among the respondents on this aspect of quality assurance. The importance of selecting competent and skilled workers to ensure the quality of construction projects is an important task during finishing work

The moderate level of agreement on the evaluation and selection of workers based on their ability suggests that the organization has processes in place to assess and onboard workers who can meet the specified quality requirements, which can contribute to the overall quality of the project.

The relatively lower mean score compared to other variables may be due to challenges in finding and retaining skilled workers, the need for more comprehensive worker evaluation and selection processes, or resource constraints in the organization.

The third factor, "Appropriate checking, measurement, or testing of products and keeping proper records," has a mean score of 3.80 and a standard deviation of 0.894. This indicates that the respondents agree that Noah Real Estate ensures appropriate checking, measurement, or testing of the products and maintains proper records of these quality control activities. The low standard deviation further reinforces the consistency in the respondents' perceptions regarding this quality assurance practice.

(Bekele,Quezon, Woysa, 2021)has emphasized the importance of implementing robust quality control measures, including product inspection, testing, and documentation, in ensuring the

quality of construction projects The moderate level of agreement on the implementation of appropriate quality control measures and record-keeping suggests that the organization has systems in place to monitor and document the quality of products and materials, which can contribute to the overall quality assurance process and provide a basis for continuous improvement.

The relatively lower mean score compared to other variables may be due to challenges in the implementation of comprehensive quality control procedures, the need for more specialized testing equipment or expertise, or issues in maintaining consistent and complete documentation.

Overall, the descriptive analysis of Noah Real Estate's consideration factors while using quality assurance systems indicates a moderately strong focus on key quality-related practices, such as selecting appropriate quality management system requirements, evaluating and selecting skilled workers, and implementing appropriate quality control measures. However, the analysis also reveals opportunities for improvement, particularly in the areas of tailoring quality management system requirements to specific contract needs, ensuring the consistent evaluation and selection of competent workers, and enhancing the implementation of comprehensive quality control procedures and record-keeping. Addressing these areas can contribute to a more robust and effective quality assurance program, leading to improved project quality, customer satisfaction, and overall organizational performance.

4.8 Noah real estate consideration factors while using quality control systems.

Table: 11 factor while using quality control

Descriptive Statistics			
	N	Mean	Std. Deviation
Establish the measurement methods used, compare the actual results to the quality standards.	45	3.56	.867

Act to bring nonconforming processes and material back to the standard based on the Information collected.	45	3.84	.852
Monitor and standardize measuring devices, include detailed documentation for all processes.	45	3.60	.939
Valid N (listwise)	45		

Source: survey (2024)

The descriptive statistics provided in Table 11 highlight the key factors that Noah Real Estate considers when using quality control systems for their projects.

The first factor, "Establish the measurement methods used, compare the actual results to the quality standards," has a mean score of 3.56 and a standard deviation of 0.867. This suggests that, on average, the respondents agree that Noah Real Estate establishes appropriate measurement methods and compares the actual results to the specified quality standards. The relatively low standard deviation indicates a high level of consistency in the respondents' perceptions on this quality control practice.

(Bhattacharjee, 2018) Has emphasized the importance of establishing clear quality standards and implementing effective measurement and monitoring processes to ensure the quality of construction projects

The moderate level of agreement on establishing measurement methods and comparing actual a result to quality standards suggests that the organization has made efforts to define and track quality metrics, which can provide valuable data for decision-making and continuous improvement. The relatively lower mean score compared to other variables may be due to the complexity of defining appropriate quality standards, challenges in implementing consistent measurement methods, or difficulties in accurately comparing actual results to the established standards.

The second factor, "Act to bring nonconforming processes and material back to the standard based on the Information collected," has a mean score of 3.84 and a standard deviation of 0.852. This implies that the respondents generally agree that Noah Real Estate takes effective actions to address any nonconforming processes or materials based on the information collected during quality control activities. The low standard deviation suggests a high level of consensus among the respondents on this aspect of quality control.

(Muhwezi Lawrence,Baguma Andrew,Mubiru Joel, 2021)Highlighted the importance of implementing effective corrective and preventive actions to address quality issues and nonconformities in construction projects

The moderate level of agreement on acting on nonconforming processes and materials suggests that the organization has processes in place to identify and address quality-related issues, which can contribute to the overall quality of the project and prevent the recurrence of similar problems. The relatively higher mean score compared to other variables may be due to the organization's emphasis on responsive and proactive quality control measures, as well as the availability of clear protocols and decision-making processes for addressing nonconformities.

The third factor, "Monitor and standardize measuring devices, include detailed documentation for all processes," has a mean score of 3.60 and a standard deviation of 0.939. This indicates that the respondents agree that Noah Real Estate monitors and standardizes the measuring devices used and maintains detailed documentation for all quality control processes. The standard deviation, while slightly higher than the previous factors, still suggests a relatively consistent perception among the respondents. The moderate level of agreement on monitoring and standardizing measuring devices, and maintaining detailed documentation, suggests that the organization recognizes the importance of these practices in supporting effective quality control, providing a reliable basis for decision-making, and facilitating continuous improvement.

The comparatively lower mean score compared to other variables may be due to challenges in consistently implementing and maintaining standardized measurement processes, the need for more specialized equipment or expertise, or difficulties in ensuring comprehensive and accurate record-keeping across all projects.

Overall, the descriptive statistics suggest that Noah Real Estate has a strong quality control system in place. From the observation and interviewee The Company establishes appropriate measurement methods, compares actual results to quality standards, takes corrective actions to address nonconformities, and maintains proper monitoring and documentation of the quality control processes.

4.9 Quality control and Assurance implementation

Table: 11 Quality control and Assurance Implementation

Descriptive Statistics			
	N	Mean	Std. Deviation
The quality control and quality assurance practices for plastering, floor and wall finishing works are well-defined and clearly communicated	45	3.44	1.119
Quality control and quality assurance practices are effectively implemented throughout the construction process.	45	3.49	1.121
The organization assigns the required qualified professionals and skilled laborers at the construction site.	45	3.80	.968
The assigned professionals perform their jobs ethically.	45	3.71	1.079
Employees are trained related to quality control and quality assurance in finishing works.	45	2.87	1.057

The trend of supervision and implementation of quality control and quality assurance in the organization is effective.	45	3.29	1.079
The concerned stakeholders work jointly to achieve the required quality of work.	45	3.71	.968
There is a need for improvement in the current quality control and quality assurance practices for plastering, floor, and wall finishing works within Noah Real Estate projects.	45	3.96	.673
Valid N (listwise)	45		

Source: survey (2024)

The descriptive statistics provided in Table 11 present the key factors related to the implementation of quality control and quality assurance practices at Noah Real Estate.

The first factor, "The quality control and quality assurance practices for plastering, floor and wall finishing works are well-defined and clearly communicated," has a mean score of 3.44 and a standard deviation of 1.119. This suggests that, on average, the respondents agree that the quality control and assurance practices for these specific finishing works are well-defined and communicated, though the relatively higher standard deviation indicates some variability in the perceptions among the respondents.

(Baba-Girei, 2021) Emphasizes the importance of clearly defined and communicated quality control and quality assurance practices in construction projects to ensure consistent quality and minimize rework

The moderate level of agreement suggests that the organization has made efforts to define and communicate its quality control and quality assurance practices for finishing works, which can contribute to common understanding and communication between the project team members. The relatively lower mean score compared to other variables may be due to challenges in

effectively communicating the quality control and quality assurance practices across all levels of the organization or the need for further refinement and standardization of these practices.

The second factor, "Quality control and quality assurance practices are effectively implemented throughout the construction process," has a mean score of 3.49 and a standard deviation of 1.121. This implies that the respondents generally agree that the implementation of quality control and assurance practices is effective across the entire construction process, though the standard deviation again suggests some variation in perception. Previous studies have highlighted the importance of consistent and effective implementation of quality control and quality assurance practices throughout the construction lifecycle to ensure the desired quality outcomes (Onoh.F, Emenike, Orji, and Obodoh, 2019)

The moderate level of agreement suggests that the organization has made efforts to implement its quality control and quality assurance practices across the construction process, which can contribute to the overall quality of the project and help, identify and address quality-related issues in a timely manner. The relatively lower mean score compared to other variables may be due to challenges in ensuring consistent implementation of quality control and quality assurance practices across all project sites, or the need for more robust monitoring and feedback mechanisms to ensure the effectiveness of these practices.

The third factor, "The organization assigns the required qualified professionals and skilled laborers at the construction site," has a mean score of 3.80 and a standard deviation of 0.968. This indicates that the respondents agree that Noah Real Estate assigns the necessary qualified professionals and skilled laborers to the construction sites, with a relatively lower standard deviation suggesting more consistency in the respondents' views on this aspect.

Existing literature has emphasized the importance of having the right mix of qualified professionals and skilled laborers to ensure the effective implementation of quality control and quality assurance practices in construction projects (Bekele,Quezon, Woysa, 2021)

The higher level of agreement on the assignment of qualified professionals and skilled laborers suggests that the organization recognizes the importance of human resources in maintaining and improving the quality of construction projects. The relatively higher mean score compared to

other variables may be due to the organization's focus on building a skilled and qualified workforce, or the availability of a well-developed skill management and resource allocation practice.

The fourth factor, "The assigned professionals perform their jobs ethically," has a mean score of 3.71 and a standard deviation of 1.079. This suggests that the respondents generally agree that the assigned professionals at Noah Real Estate carry out their duties in an ethical manner, though the standard deviation implies some difference in perception.

(Damilola, 2022)Studies have highlighted the importance of ethical conduct and professional integrity in the construction industry, as it contributes to the overall quality, safety, and reputation of the project

The moderate level of agreement on the ethical performance of assigned professionals suggests that the organization has processes in place to ensure the ethical conduct of its workforce, which can contribute to the overall quality and integrity of the construction project.

The relatively higher mean score compared to other variables may be due to the organization's emphasis on ethical training and the promotion of professional values, as well as the effective implementation of performance management and accountability mechanisms.

The fifth factor, "Employees are trained related to quality control and quality assurance in finishing works," has a mean score of 2.87 and a standard deviation of 1.057. This indicates that the respondents are relatively less convinced that the employees at Noah Real Estate receive adequate training related to quality control and assurance in finishing works, with the standard deviation suggesting some diversity in opinions.

(Bouzidi, Louafi, and Saighi, 2023) similar to the findings of this study underscores the need for structured training programs to enhance the knowledge and skills of employees in quality management practices. The literature suggests that well-trained employees are more capable of implementing effective quality management system and adapting to new challenges.

The lower level of agreement on employee training suggests that the organization may need to invest more in the professional development of its workforce, particularly in the areas of quality control and quality assurance for finishing works, to enhance the overall quality of the construction process. The relatively lower mean score compared to other variables may be due to

the organization's focus on other priorities, limited training resources, or the need for a more comprehensive and structured approach to employee training and development.

The sixth factor, "The trend of supervision and implementation of quality control and quality assurance in the organization is effective," has a mean score of 3.29 and a standard deviation of 1.079. This suggests that the respondents are moderately satisfied with the effectiveness of the supervision and implementation of quality control and assurance practices within the organization, though the standard deviations imply a few variations in perception. (Muhwezi Lawrence,Baguma Andrew,Mubiru Joel, 2021)Emphasized the importance of effective supervision and implementation of quality control and quality assurance practices to ensure the desired quality outcomes in construction projects The moderate level of agreement suggests that the organization has made efforts to supervise and implement its quality control and quality assurance practices, but there may be opportunities for improvement to enhance the overall effectiveness of these efforts. The relatively lower mean score compared to other variables may be due to challenges in ensuring consistent and effective supervision across all project sites, the need for more robust quality control and quality assurance processes, or the lack of clear accountability and feedback mechanisms.

The seven factors, "The concerned stakeholders work jointly to achieve the required quality of work," has a mean score of 3.71 and a standard deviation of 0.968. This indicates that the respondents agree that the relevant stakeholders at Noah Real Estate collaborate effectively to achieve the desired quality of work, with a relatively lower standard deviation imply more reliability in the respondents view. This study's recommendation to improve communication and collaboration with stakeholders aligns with the broader literature, which suggests that stakeholder involvement can lead to better project outcomes and increased satisfaction.

The final factor, "There is a need for improvement in the current quality control and quality assurance practices for plastering, floor, and wall finishing works within Noah Real Estate projects," has a mean score of 3.96 and a standard deviation of 0.673. This implies that the respondents strongly agree that there is a need for improvement in the current quality control and assurance practices specifically related to plastering, floor, and wall finishing works within Noah

real estate projects. The low standard deviation suggests a high level of consensus among the respondents on this aspect.

The low standard deviations, especially for the second factor, suggest a high level of consistency in the respondents' perceptions. This implies that the views expressed regarding the impact of quality control and assurance practices, as well as the need for improvement, are widely shared among the respondents. Overall, the descriptive statistics presented in Table 12 indicate that Noah Real Estate's quality control and assurance practices are recognized as contributing to the overall quality of their finished projects, but there is also a strong consensus among the respondents that further improvements are required, particularly in the areas of plastering, floor, and wall finishing.

The moderate level of agreement suggests that the organization has been able to foster a collaborative environment among the concerned stakeholders, which can contribute to the alignment of quality goals and the effective implementation of quality control and quality assurance practices. The relatively higher mean score compared to other variables may be due to the organization's efforts in facilitating communication, coordination, and joint problem-solving among the project team members, or the existence of a strong quality-focused culture within the organization.

Overall, the analysis of the implementation of quality control and quality assurance practices by Noah Real Estate indicates a moderately strong performance across various dimensions, with some areas of strength and opportunity for improvement. The organization has demonstrated a relatively higher level of performance in areas such as the assignment of qualified professionals and skilled laborers, the ethical conduct of assigned professionals, and the joint efforts of concerned stakeholders to achieve the required quality of work. However, the analysis also reveals areas where the organization can focus on enhancing its performance, particularly in the areas of employee training related to quality control and quality assurance, the effective supervision and implementation of quality control and quality assurance practices, and the consistent implementation of these practices throughout the construction process. Addressing these areas can contribute to a more robust and effective quality control and quality assurance program, leading to improved project quality, compliance, and overall organizational performance. The data suggests that there is a need for improvement in the current QC/QA

practices for specific construction elements, such as plastering, floor, and wall finishing works, within Noah real estate projects. By addressing these areas for improvement and continuing to prioritize robust QC/QA systems, Noah Real Estate can enhance the quality, reliability, and performance of its construction projects, ultimately leading to increased customer satisfaction and market competitiveness.

4.10 Quality management Challenge

Table: 13 quality management challenge

Descriptive Statistics			
	N	Mean	Std. Deviation
Problems with contractors' performance	45	3.69	.900
Poor Design	45	3.22	1.223
Financial constraints	45	3.62	1.029
Poor material	45	3.42	1.196
Lack of regular supervision	45	3.53	1.100
Poor manpower	45	3.67	1.087
Lack of standardized quality management guidelines	45	3.56	1.099
Valid N (listwise)	45		

Source: survey (2024)

The descriptive statistics presented in Table 13 highlight the key challenges faced by Noah Real Estate in implementing effective quality management practices.

The first factor, "Problems with contractors' performance," has a mean score of 3.69 and a standard deviation of 0.900. This indicates that the respondents generally agree that issues with the performance of contractors represent a significant challenge in the company's quality management efforts. The relatively low standard deviation suggests a high level of consensus among the respondents on this challenge. This finding is consistent with previous studies that have identified contractor-related issues, such as lack of expertise, poor workmanship, and

ineffective quality control, as major impediments to achieving desired quality standards in construction projects. (Nega, 2020)

The significant agreement on this issue indicates that improving contractor performance is crucial for enhancing overall project quality. It supports decisions to implement stricter contractor evaluation and monitoring processes to mitigate this challenge. Contractor performance issues could stem from inadequate skill levels, lack of proper training, insufficient supervision, and unclear contract terms. These factors contribute to the inconsistencies in meeting quality standards.

The second factor, "Poor design," has a mean score of 3.22 and a standard deviation of 1.223. This implies that the respondents are moderately concerned about the impact of poor design on the company's quality management, though the higher standard deviation suggests more variability in the perceptions among the respondents.

This finding is consistent with literature that points to the importance of design quality in construction projects. Studies by (Marco, 2018) argue that design deficiencies often lead to construction errors and rework. The moderate agreement highlights the need to improve design processes to prevent quality issues. It suggests investing in better design practices and thorough review processes to ensure designs are robust and comprehensive. The mean score and variability justify efforts to enhance design quality through better planning, collaboration, and detailed specifications, reducing the risk of construction errors.

The third factor, "Financial constraints," has a mean score of 3.62 and a standard deviation of 1.029. This suggests that the respondents agree that financial constraints pose a notable challenge in effectively managing quality within the organization. The standard deviation indicates a relatively high level of consistency in the respondents' views on this issue. This finding aligns with studies highlighting financial constraints as a major barrier to quality management. Research by (Nega, 2020)emphasizes that limited financial resources can hinder the implementation of quality control measures.

The agreement on financial constraints underscores the need for better financial planning and resource allocation to support quality management initiatives. Financial constraints may arise from budget overruns, inadequate initial cost estimation, and unexpected project expenses,

leading to cuts in quality-related expenditures. The mean score supports the need for improved financial management practices to ensure adequate funding for quality management activities.

The fourth factor, "Poor material," has a mean score of 3.42 and a standard deviation of 1.196. This implies that the respondents are somewhat concerned about the use of poor-quality materials as a challenge to their quality management efforts, though the higher standard deviation suggests a wider range of opinions on this factor. This finding is consistent with studies that identify material quality as a critical factor in construction quality. Research by (Bekele,Quezon, Woysa, 2021) shows that using substandard materials leads to structural failures and rework. The agreement highlights the need to ensure the procurement of high-quality materials, supporting decisions to implement stricter material selection and inspection procedures.

The reasons for this challenge Poor material quality may result from cost-cutting measures, lack of proper material inspection, and unreliable suppliers. The mean score justifies the implementation of rigorous material inspection and quality assurance processes to mitigate the impact of poor materials on construction quality.

The fifth factor, "Lack of regular supervision," has a mean score of 3.53 and a standard deviation of 1.100. This indicates that the respondents agree that the lack of regular supervision is a significant challenge in their quality management practices, with a relatively high level of consistency. This finding aligns with literature emphasizing the importance of regular supervision in maintaining quality standards. Studies by (Dalibi, 2016) indicate that regular supervision ensures adherence to specifications and timely detection of issues.

The high agreement underscores the need for consistent and effective supervision practices to maintain construction quality. Lack of regular supervision may result from insufficient staffing, inadequate training of supervisors and poor management practices. The mean score supports the need for enhanced supervision practices, including training for supervisors and ensuring adequate supervisory staff.

The sixth factor, "Poor manpower," has a mean score of 3.67 and a standard deviation of 1.087. This suggests that the respondents consider the quality and competence of the available workforce to be a notable challenge in their quality management efforts, with a relatively high

level of reliability in the respondents view. This finding is consistent with studies that highlight the impact of skilled labor on construction quality. Research by (Fekade, 2020)points out that a skilled workforce is essential for maintaining high-quality standards.

The agreement emphasizes the need to invest in skilled labor and training programs to improve manpower quality. Reasons for poor manpower Poor manpower quality may result from insufficient training, lack of experience, and inadequate hiring practices. The mean score justifies the implementation of comprehensive training programs and improved hiring practices to ensure a skilled and capable workforce.

The final factor, "Lack of standardized quality management guidelines," has a mean score of 3.56 and a standard deviation of 1.099. This implies that the respondents agree that the absence of standardized quality management guidelines poses a challenge in their efforts to ensure consistent quality throughout their operations. This finding aligns with literature that stresses the importance of standardized guidelines in quality management. Research by (Fekade, 2020)emphasizes that standardized processes ensure consistency and reliability in quality outcomes.

The agreement highlights the need to develop and implement standardized quality management guidelines to improve consistency and quality in construction projects. Lack of standardized guidelines may result from fragmented processes, insufficient regulatory frameworks, and varying quality standards across projects. The mean score supports the development and enforcement of standardized guidelines to ensure consistent quality management practices.

Overall, the descriptive statistics presented in Table 13 indicate that Noah Real Estate faces a range of challenges in effectively managing quality, with the most significant challenges being related to contractor performance, financial constraints, poor manpower, and the lack of standardized quality management guidelines. While some factors, such as poor design and poor materials, are also recognized as challenges, they appear to be of relatively lower concern to the respondents. And implementing quality control and quality assurance is crucial for ensuring construction services meet specified standards and customer expectations. However, several challenges arise during this process, as observed through site observation and interviewees. These challenges include poor communication and coordination, which can lead to

misunderstandings and errors in construction processes. Subcontractor experience and academic knowledge vary widely, impacting the quality and consistency of work. Poor workmanship, often resulting from inadequate training or supervision, compromises construction quality. Budget constraints limit the resources available for thorough quality checks and improvements. Commitment to quality from all stakeholders is essential but often lacking, leading to inconsistent adherence to standards. Lastly, the lack of regular supervision allows errors and below standard work to go unnoticed and uncorrected. Addressing these issues requires a comprehensive approach, including improving communication, investing in training, ensuring adequate supervision, and fostering a culture of commitment to quality within the construction industry.

4.11 Discussion

The findings of this study align with and expand upon the existing literature on quality management in construction. Previous studies have highlighted several key themes that are reflected in this research

Similar to the findings of (Bouzidi, Louafi, and Saighi, 2023) this study underscores the need for structured training programs to enhance the knowledge and skills of employees in quality management practices. The literature suggests that well-trained employees are more capable of implementing effective quality management system and adapting to new challenges.

The lack of continuous supervision identified in this study is consistent with the challenges reported by (Muhwezi Lawrence, 2021), who emphasized the need for regular oversight to ensure quality standards are maintained throughout the construction process. Continuous supervision helps in identifying and rectifying issues in real-time, preventing defects and rework.

The underutilization of quality management tools is a common issue in the construction industry, as noted by (Mikias, 2023) This study reaffirms the need for better implementation and integration of tools like total quality management and Six Sigma to drive quality improvements.

Effective stakeholder engagement is crucial for successful quality management, as highlighted by (Bekele,Quezon, Woysa, 2021) this study's recommendation to improve communication and

collaboration with stakeholders aligns with the broader literature, which suggests that stakeholder involvement can lead to better project outcomes and increased satisfaction.

(Fekade, 2020)Research highlighted specific quality problems in plastering, floor, and wall finishing activities, as well as issues related to document preparation and variation works. Similarly, the current study on Noah Real Estate's finishing works underscores the importance of systematic quality control and quality assurance practices to prevent defects and ensure that the final product meets the required standards. Both studies point to a need for comprehensive quality control and quality assurance systems to enhance the quality of construction projects in Addis Ababa. The study employed empirical methods to gather data on the actual implementation of quality control and quality assurance practices, identifying gaps and providing recommendations for improvement. The current research builds on this by using a combination of quantitative methods like surveys and qualitative insights to provide a deeper understanding of the quality issues specific to finishing works at Noah Real Estate. This methodological approach aims to bridge the gap identified in the work by offering a more detailed examination of quality control and quality assurance practices. The challenges related to resource constraints identified in this study are also discussed in the literature. Adequate resources are essential for maintaining quality standards, and the literature emphasizes the need for proper planning and management to ensure that projects are not compromised due to shortages or delays.

CHAPTER FIVE

CONCLUTIONS AND RECOMMENDATION

5.1 Summary of Major Findings

The aim of this study is to evaluate and enhance the (QC) and (QA) practices in the finishing works of private building construction projects at Noah Real Estate by identifying existing gaps and proposing actionable recommendations.

Current Practices and Gaps:

The study identifies several critical gaps in the current QC and QA practices at Noah Real Estate. While the company assigns qualified professionals and skilled laborers to construction sites, there is a significant need for adopting rigid quality standards and improving staff training programs. Additionally, the current inspection processes are not rigorous enough, and the integration of advanced technologies in QC and QA practices is lacking. These improvements are essential for ensuring higher consistency and reliability in construction quality, which directly impacts client satisfaction and project success.

Despite the qualifications and general ethical performance of assigned professionals, the study highlights the necessity for more structured training programs focused on QC and QA in finishing works. The absence of comprehensive training hampers the effectiveness of the workforce. Implementing targeted training programs will provide staff with the necessary skills to uphold and improve quality standards, aligning with industry best practices. This enhancement is crucial for leveraging the existing human resources effectively and ensuring that all staff members are well-prepared to meet high-quality standards.

Supervision and Implementation:

The effectiveness of supervision and implementation of QC and QA practices within Noah Real Estate is found to be moderately effective. This finding suggests that while some procedures are in place, there is significant room for strengthening supervisory mechanisms to ensure stringent adherence to quality standards. Enhanced supervision will lead to more consistent quality outcomes and minimize deviations from established protocols, thereby improving the overall quality of construction projects.

Challenges:

The study identifies several major challenges impacting QC and QA practices, including contractor performance issues, poor design, financial constraints, and substandard material quality. Additionally, poor manpower quality and the lack of standardized quality management guidelines further complicate the execution of QC and QA practices. Addressing these challenges is critical for ensuring that QC and QA processes are effective and that construction projects meet high-quality standards. These challenges highlight the need for a comprehensive approach to mitigate factors that adversely affect construction quality.

Noah Real Estate must invest in improving their QC and QA practices through enhanced training programs, rigid quality standards, better supervision, and rigorous inspection processes. Addressing the identified challenges, such as contractor performance, design quality, and financial constraints, is crucial for enhancing the overall quality of construction projects. Implementing these recommendations will lead to higher quality standards, improved project outcomes, and greater client satisfaction.

5.2 Conclusion

The study conducted on Noah Real Estate's Quality Control (QC) and Quality Assurance (QA) practices in finishing works reveals a significant focus on essential quality-related procedures. The results indicate a robust framework for selecting quality management systems, evaluating skilled workers, and implementing quality control measures.

However, the analyses discover important areas for improvement. Specifically, challenges remain in tailoring quality management systems to contract-specific needs, ensuring consistent evaluation and selection of competent workers, and enhancing comprehensive quality control procedures and record-keeping. These gaps highlight the need for Noah Real Estate to refine its QC and QA strategies to address these shortcomings effectively.

The findings also emphasize the critical role of systematic evaluation and detailed documentation in maintaining high standards of quality in construction projects. By focusing on these improvement areas, Noah Real Estate can enhance its overall quality assurance program, leading to better project outcomes, increased customer satisfaction, and improved organizational performance. Addressing these issues will not only boost the quality of construction projects but also solidify Noah Real Estate's reputation for excellence in the real estate sector in Ethiopia

5.3 Recommendation

Based on the findings of the study on Quality Control (QC) and Quality Assurance (QA) practices in the finishing works of Noah Real Estate, the following recommendations are proposed to improve quality standards and operational efficiency:

1. Adapt Quality management systems to contract needs

Recommendation: Develop and implement a flexible quality management system that can be tailored to meet specific contract requirements. This system should include detailed guidelines and protocols for quality assurance and control that align with the unique demands of each project.

Implementation: Conduct regular training sessions for project managers and QC personnel to familiarize them with the new system and ensure its consistent application across all projects.

2. Improve worker evaluation and selection processes:

Recommendation: Improve the criteria and processes for evaluating and selecting skilled workers. This should include a thorough assessment of workers' qualifications, experience, and past performance to ensure that only highly competent individuals are engaged in construction projects.

Implementation: Establish a centralized database of skilled workers with verified credentials and track their performance through a structured feedback system. Regularly update this database to reflect current evaluations and worker availability.

3. Strengthen quality control procedures:

Recommendation: Develop more comprehensive and rigorous quality control procedures to address all stages of the construction process, from initial inspections to final evaluations. This should include systematic checks and balances to identify and rectify defects promptly.

Implementation: Introduce standardized inspection checklists and mandatory reporting templates for all QC personnel. Ensure that these documents are regularly reviewed and updated based on project-specific requirements and lessons learned from past projects.

4. Improve documentation and record –keeping:

Recommendation: Enhance the documentation and record-keeping practices to ensure all quality-related activities are accurately recorded and easily accessible for future reference. This will facilitate better tracking of quality issues and support continuous improvement efforts.

Implementation: Implement a digital documentation system that allows for real-time updates and easy retrieval of records. Train staff on the importance of meticulous record-keeping and provide them with the necessary tools and resources to maintain comprehensive documentation.

5. Promote a culture of continuous improvement:

Recommendation: Promote a culture of continuous improvement within the organization by encouraging feedback and open communication among all stakeholders involved in the construction process. Regularly review and refine quality management practices based on feedback and performance data.

Implementation: Establish regular quality review meetings and workshops where staff can discuss challenges, share best practices, and propose improvements. Recognize and reward teams and individuals who demonstrate exceptional commitment to quality enhancement.

By implementing these recommendations, Noah Real Estate can significantly improve its Quality Control and Quality Assurance practices, leading to higher quality construction projects, increased client satisfaction, and a stronger reputation in the real estate sector.

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APPENDEX 1
QUESTIONNAIRE

St. Mary's University School of Graduate Studies

MA in project management program

This study aims to assess the quality control and quality assurance practices in finishing work in Noah Real Estate. The following questionnaires have been developed to help the researcher gather the information necessary to answer the research questions of the study.

Please answer the following questions by writing a brief answer or ticking "√" in the boxes provided.

Section I: Background information

Please mark all of your answers with a "√" in the box that is provided next to each statement.

1. Gender A. Male ☐ B. Female ☐
2. Age
   A. 20-30 years ☐ B 31-40 Year ☐ C . 41-50 Years ☐ D ≥ 51 Years ☐
3. Educational level
   A.BA/BSc Degree ☐ B. MA/MSc ☐ C. PhD ☐ D. Diploma ☐
4. Service year in the Company?
   A. 1-5 years ☐ B. 6-10 years ☐ C. 11-15 years ☐
   D.16-25 years ☐
5. Work experience in the current position
   A. Under 5 years ☐ B. 6- 10 years ☐
   C 11 -20 years ☐ D. 21 – 30 years ☐
6. Relation to the Project
   A. Owner ☐ B. Contractor ☐ C. Consultant ☐
   D. Other, please specifies: _____

7. Job title in the organization/company:

A. Project Manager ☐ B. Contractor ☐

C. Quality control and Quality assurance manag ☐

D. Site Engineer/ office enginee ☐ E. Supervi ☐

F. Consultant ☐ G. General Forem ☐

Section II: Quality Control and Quality Assurance Practices

Yes or no questions

1. Does your organization have a quality management system?

A. Yes ☐ B. No ☐

2. The organization has a responsible department for quality control and quality assurance.

A. Yes ☐ B. No ☐

3. Are there documented quality control plans specifically addressing plastering, floor, and wall finishing works in Noah Real Estate projects?

A. Yes ☐ B. No ☐

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

Quality control practice

No	Quality control	1	2	3	4	5
1	The organization has standard specifications and checklists for controlling the quality of finishing works.					
2	The supervisor properly controls the quality of					

	work as per the specifications and drawings.					
3	The concerned bodies frequently check whether the executed work complies with the approved materials.					
4	Quality control inspections during plastering, floor and wall finishing works are conducted at appropriate intervals.					
5	Defects in plastering, floor, and wall finishing work are promptly addressed.					

Quality assurance practice

No	**Quality assurance**	1	2	3	4	5
1	The specifications in the contract provide clear descriptions.					
2	The concerned professionals approve materials as per certification and maintain quality assurance properly.					
3	Budgeting practices support the implementation of quality assurance measures in plastering, floor, and wall finishing works.					

Does your company consider these factors while using quality control and quality assurance systems?

Quality assurance

NO	**Quality assurance**	1	2	3	4	5
1	Selects the appropriate quality management system requirements for each contract.					
2	Evaluate and select workers on their ability to satisfy specified requirements.					
3	Appropriate checking, measurement, or testing of					

	products and keeping proper records.					

Quality control

No	**Quality control**	1	2	3	4	5
1	Establish the measurement methods used, compare the actual results to the quality standards.					
2	Act to bring nonconforming processes and material back to the standard based on the Information collected.					
3	Monitor and standardize measuring devices, include detailed documentation for all processes.					

Section III: Implementation and impact

Quality control and assurance implementation-related questions

No	**Implementation**	1	2	3	4	5
1	The quality control and quality assurance practices for plastering, floor and wall finishing works are well-defined and clearly communicated					
2	Quality control and quality assurance practices are effectively implemented throughout the construction process.					
3	The organization assigns the required qualified professionals and skilled laborers at the construction site.					
4	The assigned professionals perform their jobs ethically.					

5	Employees are trained related to quality control and quality assurance in finishing works.					
6	The trend of supervision and implementation of quality control and quality assurance in the organization is effective.					
7	The concerned stakeholders work jointly to achieve the required quality of work.					
8	There is a need for improvement in the current quality control and quality assurance practices for plastering, floor, and wall finishing works within Noah Real Estate projects.					

Part III: Quality management challenges

No	**Quality management challenges**	**1**	**2**	**3**	**4**	**5**
1	Problems with contractors' performance					
2	Poor Design					
3	Financial constraints					
4	Poor material					
5	Lack of regular supervision					
6	Poor manpower					
7	Lack of standardized quality management guidelines					

Open-ended questions

1. Have there been instances where poor quality control or assurance resulted in rework or delays in project completion? If yes, please provide examples. (Open-ended)

2. There are identifiable causes for lower quality in construction projects. if your answer is yes please list them.

3. Quality problems most frequently occur in specific parts of building construction. If yes provide example

Thank you for taking the time to complete this questionnaire. Your insights are valuable for the success of this research study.

APPENDEX 2

Interview

1. Do you use any quality management tools in your current project? If you do, which Method you use in your current project?

2. What are the major challenges faced by your construction firms in practicing Quality management system?

3. How does Noah Real Estate ensure that subcontractors and workers adhere to quality control and assurance requirements during plastering, floor, and wall finishing?

4. How does Noah Real Estate address any issues or defects identified during quality inspections?