Title:

"Effect of Project Quality Management Practices on Project Success: The Case of Government Housing Projects in Akaki Kality Sub city"

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Abstract

This study examined the effect of project quality management on project success in government housing building projects in Addis Ababa, Ethiopia, using the Akaki Kality Werku Site 5000 Housing Project as a case study. The study was motivated by persistent challenges in housing projects, including quality deficiencies, schedule delays, cost overruns, and stakeholder dissatisfaction, despite the growing emphasis on quality management practices. An explanatory research design with a quantitative approach was employed. Data were collected from 54 project professionals, including project managers, engineers, consultants, supervisors, and quality personnel, using structured questionnaires and a census sampling technique. The collected data were analyzed using descriptive statistics, Pearson correlation, and multiple linear regression with the aid of SPSS Version 27. The findings revealed that project quality management practices were generally implemented at a satisfactory level within the project. Correlation analysis indicated positive and significant relationships between Quality Planning, Quality Assurance, Quality Control, and Project Success. The regression results showed that the overall model was statistically significant ($R^2 = 0.746$, $F = 48.923$, $p < 0.001$), explaining 74.6% of the variation in project success. Quality Assurance ($\beta = 0.611$, $p < 0.001$) and Quality Control ($\beta = 0.308$, $p = 0.006$) had significant positive effects on project success, whereas Quality Planning ($\beta = 0.004$, $p = 0.926$) had no statistically significant effect. The study concludes that effective Quality Assurance and Quality Control practices are critical determinants of project success and recommends strengthening quality management systems throughout the project life-cycle to improve housing project performance.

Keywords: Project Quality Management, Quality Planning, Quality Assurance, Quality Control, Project Success, Government Housing Projects, Addis Ababa, Ethiopia.

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CHAPTER ONE

1.1. Background of the study

Quality management is not something new but it's a practice that has been adopted by human efforts to build something that have continued for thousands of years long before standard or certification existed societies knew that proper planning, careful measurement, and uniformity of workmanship were essential. For any big project to be successful these things were very important. The idea of quality movement like Total Quality Management (TQM) gained momentum globally after World War II and showed a continuous improvement and customer focus became central. International standards were also adopted such as ISO 9000 series (first published in 1987) organizations have provided a system for quality management. In project work, these ideas were included in project management guides like the Project Management Body of Knowledge (PMBOK), which is one of the core knowledge areas of quality management. PMBOK book clearly links quality planning, quality assurance and quality control to overall project success on time, within budget, meeting stakeholder expectations.

In the modern era, the construction industry is one area in which bad quality management can have an impact and a serious consequence. Buildings are not mass produced each project is unique it involves a lot of stakeholders and it has to be for the long term maybe for decades. Deficiencies in materials, workmanship, or construction processes lead to costly rework, safety risks, and dissatisfied clients in projects (O'Brien et al., 2020; Chisom Njoku, 2023). In projects, rework is expensive, unsafe, and unpopular because of the construction processes.

Therefore, Project Quality Management (PQM) is the most important element to be successful in a project. Quality management is an effective mechanism for managing complex activities, and a more efficient alternative than other methods. The approach is more participative than the traditional hierarchical approach.

Traditional project management focuses on the "triple constraint" of time, budget and cost but modern perspectives argue that these are no longer sufficient to guarantee success. The

increasing complexity of projects, large capital investments, and strict quality standards has shifted the focus toward a more holistic view of success.

Project success is now often viewed through the lens of stakeholder satisfaction and the degree to which a project adds value to an organization. In the specialized era of construction, PQM is manifested through three primary pillars as stated on the PMBOK book:

- Quality Planning: is the process of identifying quality requirements or standards for the project and documenting how the project will demonstrate compliance.
- Quality Assurance: is the application planned systematic quality activities to ensure that the project will employ all processes needed to meet requirements.
- Quality Control: it involves monitoring specific project results to determine whether they comply with relevant quality standards and identifying ways to eliminate the cause of unsatisfactory results.

These all three variables of a quality management system planning, assurance, and control had a significant positive impact on project outcomes. Particularly, quality assurance often shows the greatest effect on ensuring a project meets its intended objectives. By exploring these relationships, for this paper I will try to see the effects of project quality management that has played on the project's successful completion of the previously constructed buildings and the progress of the on-going project.

The construction industry encompasses a range of professions and production procedures that pose challenges in guaranteeing quality control (Pheng & Teo, 2003). Traditional methods of quality management in the construction industry were considered insufficient to meet the requirements of contemporary projects and society (Rounds & Chi, 1985).

Quality plays a vital role in the success of construction projects. Project success and the quality of construction are closely tied to meeting participant expectations. In Ethiopia's construction industry, there has been a continuing struggle with quality issues despite large annual expenditure on infrastructure and development projects. If project results are not satisfactory or if it is not in accordance with the required standards, it results in faulty construction, which requires extra investments in defect removal and maintenance work. The construction industry has been subject to a lot of criticism for performance and productivity when compared with other

industries during the past few decades. As the sector is undergoing a period of rapid reformation in technological and social changes it makes it change how it works. The changes have significant impacts on business practices and in all construction companies either public or private, regardless of their size adapting to these changing circumstances has become necessary in the industry for survival. Many clients are questioning the traditional management approaches in construction and some issues are being raised like expecting greater service standards, quicker project completion and technological innovation. In Ethiopia context urbanization and government policies have resulted in a fast expansion of the construction industry. This forced the government to invest in housing infrastructures and buildings used for commercial or public purposes especially in cities like Addis Ababa, where rural population migration has been a stimulus to demand for residential housings (World Bank, 2024). This expansion is closely related to the need for urbanization and infrastructure to house and serve commercial needs.

in the capital, Addis Ababa, there has been a gush in the number of public condominiums and private condominiums housing developments. However, numerous studies reveal that quality is still a constant problem in low and middle income housing schemes like the 20/80 and 40/60 schemes. Common problems on buildings include faulty plumbing or electrical installations, cracked walls and floors, leaking roofs and poor finishing works, like peeling paint and occur shortly right after handover (Alsen & Woyesa, 2020). These defects can frequently be seen and identified as a result of poor quality planning, lack of supervision, lack of coordination with suppliers and low technical capacity of contractors or micro enterprises. The situation is noticeable in almost all sub-cities though for the sake of the data availability I would like to do it on Akaki Kality, where government housing projects are fast developing to serve middle income families. These projects are intended to provide safe, durable homes but mostly experience delays, cost overruns, and quality issues that impact their clients. This research is, therefore, aimed at closing that gap by investigating the impact of project quality management practices on project success specifically in government housing buildings in Addis Ababa Akaki Kality sub-city .The research has a practical objective to offer insights that can be useful to contractors, clients, and others regulators enhance results in among Ethiopia's quickest growing cities.

1.2. Statement of the Problem

Project quality management is widely recognized as a critical determinant of project success, particularly in construction projects where the quality of final deliverables directly affects client satisfaction, project performance, safety, and long-term sustainability. According to the Project Management Institute (PMI, 2021), project quality management involves quality planning, quality assurance, and quality control processes that ensure project deliverables meet specified requirements and stakeholder expectations. Despite the recognized importance of quality management, many construction projects continue to experience significant quality-related problems, indicating a gap between quality management theory and practice.

The construction industry, particularly residential housing projects, continues to face persistent quality challenges worldwide. Empirical evidence indicates that construction defects, poor workmanship, inadequate quality planning, and ineffective quality control systems contribute to cost overruns, schedule delays, increased maintenance costs, and reduced customer satisfaction (Ahmed, 2019). Studies have shown that many quality defects in residential buildings become apparent only after project completion, resulting in additional repair costs and financial burdens for owners and government agencies. Furthermore, international quality standards such as ISO 9001 (2015) emphasize that poorly defined quality requirements, inadequate documentation, and insufficient stakeholder involvement frequently lead to project performance failures and dissatisfaction among end users.

In construction projects, quality management is often implemented as a reactive process focused primarily on inspection and defect correction rather than as a proactive management approach emphasizing quality planning, prevention, and continuous improvement. According to Crosby (1979), relying mainly on defect detection rather than prevention increases project costs, creates inefficiencies, and reduces overall project performance. Additionally, weak integration of quality management with other project management constraints such as cost, time, and risk management contributes to budget overruns, schedule delays, and poor project outcomes (PMI, 2021; Kerzner,

2022). These problems are particularly critical in public housing projects where quality failures affect a large number of beneficiaries and require substantial public resources for correction and maintenance.

In the context of government housing projects, challenges related to poor workmanship, inadequate supervision, insufficient stakeholder participation, and ineffective quality management practices have continued to affect project performance. In many cases, quality requirements are not adequately identified, documented, communicated, or monitored throughout the project life cycle.

As a result, projects may fail to achieve the expected standards of quality, cost efficiency, timely completion, and stakeholder satisfaction. Despite significant public investment in government housing development programs, concerns regarding construction quality, defects, maintenance requirements, and customer dissatisfaction continue to be reported, indicating the need for improved project quality management practices.

Although numerous studies have examined construction project performance and project management practices, there remains a limited empirical understanding of how specific dimensions of project quality management, namely quality planning, quality assurance, and quality control, influence project success within the context of government housing projects in Ethiopia. Most previous studies have focused on general construction management issues or have examined project success without separately analyzing the individual contributions of the major project quality management components. Furthermore, empirical evidence specifically related to government housing projects in Akaki Kality Sub-city remains scarce. This represents a significant contextual and empirical research gap that requires further investigation.

Therefore, this study aims to examine the effect of project quality management practices, specifically quality planning, quality assurance, and quality control, on project success in government housing projects in Akaki Kality Sub-city, Addis Ababa. The study contributes to the existing body of knowledge by providing empirical evidence on the relationship between project quality management dimensions and project success indicators within the Ethiopian public housing sector. The findings of this study are expected to provide practical insights for

project managers, policymakers, contractors, and government agencies to improve quality management practices and enhance the success of future government housing projects.

1.3. Research Questions

1. What is the effect of project quality management processes on project success in government housing projects in Akaki Kality Sub-city, Ethiopia?
2. To what extent does plan quality management influences the controlled execution of the project and the realization of business objectives?
3. How does performing quality assurance through quality audits, process analysis, and continuous improvement contribute to long term stakeholder satisfaction in the context of government residential housing market?
4. In what ways does Control Quality (inspections, testing, quality control measurements, and the use of tools such as control charts and checklists) ensure that project deliverables meet defined quality standards and are completed within schedule and budget constraints?

1.4. Research Objectives

1.4.1. General Objective

To investigate the effect of project quality management processes on the achievement of project success in government housing projects in Akaki Kality Subcity, Ethiopia?

1.4.2. Specific Objectives

1. To examine the effect of Plan Quality Management practices on project success and the achievement of define project objectives.

2. To assess the contribution of Perform Quality Assurance on stakeholder satisfaction and to process efficiency.
3. To analyze how Control Quality practices ensure deliverable conformity and support time and cost performance.
4. To evaluate the combined effect of quality management practices (Quality Planning, Quality Assurance, and Quality Control) on the success of government housing projects in Addis Ababa.

1.5. Significance of the Study

This study is important for the potential insights it can provide for context specific application of project quality management processes within Ethiopia's housing construction sector particularly in Akaki Kality Sub-city government housing projects. By focusing on real project environments, the research captures practical challenges and operational realities associated with planning, managing, and controlling quality in residential developments. In line with established project management principles, the study emphasizes the role of structured quality planning, assurance, and control processes in achieving defined project objectives and enhancing overall project performance. This localized perspective strengthens the relevance of the research, ensuring that the findings reflect the unique institutional, technical, and managerial conditions of the Ethiopian construction industry.

Furthermore, the study provides practical value for key stakeholders, including project managers, developers, contractors, and policymakers, by demonstrating how effective quality management practices contribute to improved project success outcomes. The findings are expected to support better decision-making, promote the adoption of preventive and continuous improvement approaches, and enhance alignment between project deliverables and stakeholder expectations. Beyond individual projects, the study contributes to the broader advancement of the construction sector by clarifying the relationship between quality management processes and multi-dimensional project success. In doing so, it encourages the dissemination of best practices and

supports ongoing efforts toward efficiency, accountability, and sustainable development within Ethiopia's housing industry.

I

1.6. Scope of the Study

The focus of this study is on the use of Project Quality Management practices in Ethiopia, mainly in government housing construction projects in Akaki Kality Sub-city, and their effect on achieving project success. The study is designed to investigate the impact of quality management processes on the project success in terms of time, cost and suitability As seen in past construction projects, implementation of structured quality management practices has often been inadequate, resulting in quality defects, rework, and inefficiencies. In recent years, there has been an increasing adoption of formal project management practices intended to enhance quality outcomes and the overall project performance has not been demonstrated to be effective enough, however their practical effectiveness has not been sufficiently studied within the local context. This study is confined to selected government residential construction projects in Akaki Kality Sub-city completed and ongoing projects. It seeks to include input from important stakeholders, such as site engineers, project managers, designers, contractors and client representatives to evaluate the role and effectiveness of real world project contexts for quality management processes. By analyzing these stakeholders' experiences and practices the study tries to gain insight into whether the use of Project Quality Management processes is an effective way to achieve project success or not, based on experiences and practices to align with the increasing demand for quality housing development in Ethiopia.

1.7. Limitations of the Study

Although this study was conducted carefully, it has some limitations. The study was limited to one government housing project in Akaki Kality Sub-city; therefore, the findings may not be generalizable to all construction projects in Ethiopia. In addition, the study relied primarily on self-administered questionnaires, and respondents' answers may have been influenced by personal perceptions or response bias.

Despite these limitations, several measures were taken to ensure the quality and credibility of the research. A structured questionnaire was developed based on established literature and the PMBOK framework. The questionnaire was reviewed before data collection to improve clarity and relevance. A census approach was employed to include all 54 eligible professionals working on the selected project, minimizing sampling bias. Furthermore, the reliability of the measurement instrument was confirmed using Cronbach's alpha, and appropriate statistical analyses were conducted using SPSS. These measures enhanced the validity, reliability, and overall quality of the study findings.

1.8. Organization of the Study

This study consists of five chapters, each of which deals with a particular aspect of the research in a logical and systematic manner. Chapter One is the introduction of the study which contains background of the study, problem statement, research questions, research objectives, significance of the study, scope of the study and limitations of the study. This chapter gives the background information and overall context for the research. Chapter Two discusses the literature review of relevant literature on Project Quality Management and project using existing theories, models and empirical research to develop success. It emphasizes the critical elements of quality management processes: Plan Quality Management, Perform Quality Assurance and Control Quality, and how they relate to project performance and stakeholder satisfaction. The research methodology used in the study is described in Chapter Three, which covers research design, sources of data, sampling techniques, methods of data collection and data analysis procedures. It also explains the measurement of the variables of the study and the validity and reliability of the study. The data analysis and discussion of findings are presented in Chapter Four based on the

collected data. The findings are explained in the context of the research goals and the literature, and explained how Project Quality Management processes affect project success. Finally, the major findings of the study, conclusions and recommendations for practitioners and stakeholders are summarized in Chapter Five. It also proposes the directions for further research in the field of construction project quality management.

CHAPTER TWO

2.1. LITERATURE REVIEW

This chapter presents a comprehensive review of the literature related to the impact of project quality management practices on project success, specifically on government housing construction projects. Theories are presented and empirical evidence is included and integrated into the discussion established frameworks, such as principles from the Project Management Body of Knowledge (PMBOK) and previous prior academic research. The chapter is organized to give a conceptual and theoretical knowledge of the three quality management elements quality planning, quality assurance, quality control improvements and project success.

It also explores into the meaning of project success and its dimensions for measuring success.

The correlation between project quality management practices and project success is very important so it was analyzed and developed a conceptual framework. Finally, a synthesis of the Literature and identification of research gaps are presented, especially in the context of the government housing projects in Akaki Kality Subcity.

2.2 Theoretical Background

Quality management has become an essential part of project management especially in the construction sector where there is high sensitivity to variations in performance. According to ISO 9000 quality is defined as the degree to which a set of inherent characteristics fulfill requirements. In project environments, quality is not defined only by technical specifications or internal standards. Instead it is determined by the extent to which project deliverables satisfy the needs for which the project was undertaken. This implies that quality must be viewed from the perspective of the end user and other stakeholders.

In practice, this is not always straightforward. Different stakeholders may have different expectations, and focusing too much on one group may result in dissatisfaction for another. This situation illustrates why a structured approach to quality management is required. Therefore

project quality management provide a systematic way of ensuring that these expectations are identified, understood, and consistently met throughout the project lifecycle.

2.2.1. Concepts of Project Quality Management

Project quality management includes the processes and activities that determine quality, policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken (Drob, 2013). According to the Project Management Institute, these processes are typically categorized into quality planning, quality assurance, and quality control.

Quality management should always be proactive. For this an effective approach is to plan quality in advance and create an environment that minimizes the possibility of defects occurring in the first place. There are several reasons why poor quality may occur even when project teams attempt to deliver according to specifications. These include unclear requirements, failure to involve all stakeholders, misunderstanding of requirements, changes during the project, and failure to achieve defined standards. Each of these issues highlights the need for a structured quality management system (PMI,2017;ISO,2015).

Modern quality management emphasizes several key principles like customer satisfaction, prevention over inspection, continuous improvement, management responsibility. These principles form the foundation for understanding how quality management contributes to project success (Neyestani, 2017; Reaiche et al., 2022).

These principles form the foundation for understanding how quality management contributes to project success.

2.2.2. Deming’s Theory of Continuous Improvement

One of the most significant bases for modern quality management is offered by W. Edwards Deming. He said that quality was not only about catching mistakes, but fixing the system so that mistakes don't occur in the first place. Deming's work can be summarized by the Plan-Do-Check-Act Cycle (PDCA), which is often referred to as the Deming Wheel. It is a four step process to

continuously improve processes and products. This cycle is designed to demonstrate that processes must be constantly monitored and adjusted to enhance performance and minimise variation.

The second aspect of Deming's philosophy is that most quality problems stem from the system itself and are not due to a person. This puts the management in charge of developing processes that will help achieve quality outcomes. In project environments, it implies having the proper planning, resources, and monitoring in place.

Therefore the importance of the Deming's theory in my study is the importance of prevention and continuous improvement. Project teams can minimize rework, manage costs, and enhance project performance by working to optimize processes, instead of fixing defects when they happen.

2.2.2.1. Contribution of the theory to the study

Deming's Theory of Continuous Improvement provides the theoretical foundation for this study by emphasizing that quality should be achieved through well designed processes and continuous improvement rather than through defect detection alone. The theory supports the independent variables of this study Plan Quality Management, Perform Quality Assurance, and Control Quality by explaining that effective planning, process monitoring and continuous improvement reduce defects, minimize rework and improve project efficiency. Consequently the theory suggests that effective quality management practices contribute to project success through improved quality performance, timely project completion, cost control and enhanced stakeholder satisfaction in government housing projects.

2.2.3. Juran's Quality Trilogy

Joseph Juran's Quality Trilogy is like three legs of a stool. If one leg is missing, the project or product is going to wobble.

Instead of looking at quality as a single "task," Juran provides a structured approach to managing quality that has a continuous cycle made of three specific stages: Planning, Control, and Improvement.

1. Quality Planning (Design)

This is the "prep work." In this stage, you figure out who your customers are and what they actually need to create a process that is capable of meeting goals under operating conditions by Identify the customer, determine their needs, and develop product features that respond to those needs.

2. Quality Control (Maintenance)

This stage is about making sure things stay on track and don't fall apart during daily operations to keep the process running at its best and prevent things from getting worse. This is done by doing these actions by measuring actual performance, compare it to the goals, and act on the difference (fix what's broken right away).

3. Quality Improvement

This is where to move from "good" to "great" to find a way to reach a whole new level of performance.

Identify specific project tasks for improvement then establish a team to handle them and provide the resources needed to make a permanent change.

Juran's main point was if you don't plan well you will spend all your time in "Control" mode (fighting fires). By focusing on "Improvement," you reduce waste and lower the cost of poor quality over time. So in project environments Juran's trilogy provides a clear framework for ensuring that quality is planned, monitored, and continuously improved for successful project delivery.

Therefore this framework supports my study by explaining how effective planning, control and continuous improvement contributes to achieving project objectives in terms of time, cost, quality performance and client satisfaction.

Theories mentioned above give a coherent perception of quality management as a systematic and continuous process. Both theories stress the importance of planning for quality instead of merely doing quality and they highlight the importance of continuous improvement in enhancing project performance. They understand the importance of management in ensuring that: quality processes are effectively implemented. The theories propose that quality management can lead to a decrease in the following: Reduces rework, errors, and increases efficiency.
Together these perspectives provide a comprehensive understanding of how quality management influences project outcomes. The theories suggest that effective quality management reduces errors, minimizes rework, and improves efficiency. On the other hand poor quality management can result in increased costs, delays, and reduced project performance.

From this section we can establish a clear relationship between project quality management and project success. Project quality management which includes planning, assurance, and control represents the independent variable of this study. Project success which measured in terms of cost, time, quality performance, and stakeholder satisfaction represents the dependent variable.

Quality management in construction projects should mean maintaining the standards of construction works to ensure customer satisfaction and long term competitiveness for the companies. This would contribute to business survival and growth. So these relationships form the basis for examining the effect of project quality management on project success in government housing construction projects in Addis Ababa.

2.2.3.1. Contribution of Juran's Quality Trilogy to the Study

Juran's Quality Trilogy directly supports the conceptual framework of this study because its three components Quality Planning, Quality Control, and Quality Improvement closely correspond to the project quality management processes examined in this research. The theory explains that quality should be planned before project execution, controlled during implementation, and continuously improved throughout the project life cycle. Therefore, it provides a theoretical basis for examining how Quality Planning, Quality Assurance, and Quality Control influence project

success measured in terms of quality performance, time, cost, and stakeholder satisfaction in government housing projects.

2.3. The PMBOK Project Quality Management Processes

There are three project Quality Management Processes. These are dealt below in detail.

2.3.1. Plan Quality Management

Plan Quality is a process of determining quality requirements or standards for the project or a product and documenting how the project will show compliance. Also it's making adjustments to plans and completes a detailed examination of impact on plans. It is a process in which the quality for a specific project and its products are determined. Planning for quality is just like planning on any other activity. It is intended to create a description of what the quality requirements are and how they are going to be achieved. (Free Management eBooks, 2014).

2.3.2. Perform Quality Assurance

The difference between quality assurance and quality control is not well understood. The difference between the two is that quality assurance is part of the executing process and is related to ensuring the quality objectives are achieved. It is focused on process improvement.
The use of systematic quality activities to make sure that the project will utilize all processes required to satisfy requirements. This process also offers an ongoing improvement process to enhance the quality of all processes to minimize waste and eliminate non-value added activities.
These processes will determine the location of best practices, or where they are not being used, and then distribute best proven practices in similar projects that will assist the project team in implementing best practices and assure project stakeholders that work is being carried out according to accepted best practices. (Free Management eBooks, 2014).

2.3.3. Perform Quality Control

It is the process of observing specific project results to decide if they meet the quality criteria of the project and if not, to find out how to remove the causes of unsatisfactory results. Also, it tries to answer two questions first, whether or not the project is succeeding in meeting its quality requirements? If not, how is this to be resolved? Quality control is the process of checking the output against agreed quality standards, and applying inspection and measurement methods to detect defects and take corrective action (Crosby, 1979).

2.4. Project success

Project success is one of the most widely discussed concepts in project management literature, but it still appears difficult to define in a single, universally accepted way. Different scholars have varying ways of looking at the idea. Initial research has correlated project success with the classic "iron triangle" of time, cost and quality. In this perspective a project is regarded as successful if it is finished on budget, on schedule, and meets the requirements of quality standards (Atkinson, 1999). Later researchers started to doubt just those criteria's are enough. A housing project could be completed on schedule and on budget, but still not be leaving clients unhappy due to substandard quality or functional issues after handover. This shows that project success may extend beyond technical performance.

Some authors have suggested that stakeholder satisfaction should be considered as a key success factor for projects success too. Based on Muller and Turner (2007), project success criteria are the criteria that can be used to determine if a project is successful or not. They appear to be suggesting that success may be different for different evaluators the project and what they think is most important to expect. Westerveld (2003) emphasized that customer satisfaction should be combined with the conventional time, cost, and quality.

In practice, this makes sense because stakeholders rarely evaluate projects using identical standards. A contractor may focus on profitability, while clients will be more focused to

durability, usability, and overall value. Because of this, project success appears to be both objective and subjective at the same time.

From the reviewed literatures project success in this study is understood as the extent to which government housing projects achieve their intended objectives in terms of time, cost, quality, and stakeholder satisfaction. However, the concept should not be treated as fixed or universally measurable in every situation. The criteria for judging success may differ depending on project complexity, stakeholder expectations, and the broader organizational context. For this reason, the present study adopts a multidimensional understanding of project success, focusing mainly on project completion within planned schedule and budget, achievement of required quality standards, and satisfaction of clients and key stakeholders.

2.5. Total Quality Management (TQM) Theory

The concept of Total Quality Management (TQM) was essentially developed by W.Edwards Deming, Joseph Juran, and Walter Shewhart it basically a system that treats quality as not a final checkpoint but as something baked into every stage of a process. In the world of projects, this translates to moving from just fixing defects to preventing them through continuous improvement, employee involvement, and a strong customer focus. For government housing projects in places like Addis Ababa, where timelines are tight and client expectations around durability and finishes can vary wildly, TQM ideas appear especially relevant. They push project teams to standardize processes, listen closely to homeowner feedback early on, and treat quality as everyone's responsibility rather than just the site supervisor's job.

That said, applying TQM in practice isn't always straightforward. Subcontractors cut corners to meet deadlines or when material costs suddenly spike. This creates a gap between theory and reality that my thesis hopes to explore.

2.5.1. Contribution of (TQM) Theory to the Study

Total Quality Management (TQM) contributes to this study by emphasizing that quality is the responsibility of everyone involved in the project and should be integrated into all project

activities. The theory supports the study by explaining that continuous improvement, customer focus, teamwork, and process standardization enhance project performance. In the context of government housing projects, TQM provides a theoretical basis for understanding how effective implementation of Quality Planning, Quality Assurance, and Quality Control can improve project success by reducing defects, minimizing rework, controlling costs, meeting schedules, and increasing stakeholder satisfaction.

2.6. Stakeholder Theory

The stakeholder theory is largely based on the ideas of R. Edward Freeman in the 1980s. A project or any organization should benefit all the stakeholders of the project, not just shareholders or the client who pays the bills. In government housing projects, this includes future homeowners, contractors and suppliers, local government issuing permits nearby, communities that are impacted by construction noise or traffic, and even the financial backers. If any of these are ignored voices can subtly destroy success, perhaps by late approvals, community grievances or a number of subcontractors walked out when their payment concerns were ignored.

Balancing all these interests is a tricky business at the same time. A developer could provide homes that are good, but are criticized by environmental groups or are not accepted by buyer's regulatory delays due to regulatory stakeholders. Stakeholder theory calls for mapping these proactive relationships and expectations management. In the government house market in Ethiopia, in a place where client-consultant-authority relationships are quite personal

a lens provided by theory is helpful. It implies that project quality management may be a key factor in project success, but not only by technical controls, but by truly understanding how various stakeholders perceive and influence that quality.

2.6.1. Contribution of the theory to the Study

Stakeholder Theory contributes to this study by explaining that project success should be evaluated not only by completing the project within time, cost, and quality constraints but also by satisfying the expectations of key stakeholders. The theory supports the dependent variable of

this study by providing a basis for including stakeholder satisfaction as an important dimension of project success. It also suggests that effective Project Quality Management practices improve communication, trust, and confidence among clients, contractors, consultants, and end users, thereby increasing the likelihood of successful government housing projects.

2.7. Empirical Review

This paper summarizes the project quality management practices and their effect on the success of a project in construction. Literature's in construction project management have discussed that quality should not be considered as a standalone activity but should be integrated into the project management processes. Free Management eBooks (2014), investigated that quality planning is a process of determining the standards, quality assurance is a process of ensuring that the right process is being applied and quality control is a process of ensuring that the output is meeting the required standards. The results show that the systematic use of these practices leads to better project results in terms of time, cost and specification.

Similarly Amir et al. (2002), conducted a study to evaluate the effectiveness of quality management practice and found that effective quality planning and control is closely linked to a reduction of defects and minimizing rework, which are major causes of project delays and cost overruns in construction projects. Regular inspection, monitoring and fit to defined standards enable projects to identify deviations early and take corrective actions. This underpins the principle that prevention is better than inspection, as avoiding waste and improving overall efficiency. The study generalized that projects with a well implemented QP and QC mechanisms are more likely to successfully meet their intended project goal(s). Other empirical evidence emphasizes that project success is defined and evaluated by the stakeholders, specifically by clients. Kilinc and Celik (2015) demonstrate the benefits of engaging clients at the early stages of a project in order to match quality demands with project goals to ensure the project is delivered to the users' expectations. Their participation supports the relevance and effectiveness of project deliverables by bringing in their real needs to the quality requirements. This is consistent with the guiding principle that the ultimate consumer, not the producer, should determine what

constitutes quality. So this alignment increases relevance of project outputs and satisfaction. Many times the success of a project is judged by the degree to which the client's needs are met, and therefore the importance of incorporating the client's expectations into the quality management needs. Research has shown that quality management and client satisfaction are correlated and are considered a key factor in project success. Basing on this point, Harkinanpal (2006), states that customer satisfaction is very much related to customer loyalty and long term performance of the organization. In the construction industry, quality assurance is a crucial aspect that guarantees that projects are finished to the client's satisfaction and improve the organization's competitive edge. This highlights the need for incorporating quality as an integral part of the project lifecycle. Amir et al. (2002) stress the need for ongoing monitoring and control of quality by frequent inspections of design, materials and construction processes. Their results suggest that quality control systems are crucial to achieving good results on projects.
The literature's generally show that quality management practices, when implemented successfully, have a great influence on the success of the project.

2.8. Conceptual Framework

When we look closely at project quality management, it doesn't really behave like a single action or step. It's more like a series of related practices which appear to reinforce themselves over time. Experiences with projects in practice indicate that quality is not be added on at the end. It should be developed early adjusted in the project, adjusted along the way and reviewed as the project progresses. This study is done from a three-dimensional approach to project quality management practices, namely: Quality Planning, Quality Assurance and Quality Control. In practice these are not activities that are carried out individually, they do overlap. Activities performed in the planning process (such as the identification of measurable quality criteria) could impact on the assurance or control of quality at a later stage. If the initial definitions are unclear the rest of the process becomes more difficult to deal with.

What "quality" means is not always as clearly defined as it is in most projects. Different stakeholders may have different definitions of quality in the field of construction, such as

engineers might be concerned about quality in terms of technical standards and on the other hand usability or the finishing details is more important for clients. Mismatch perspectives can be a problem if not addressed early, and it can impact project success.

What next comes is quality assurance which focuses on the processes being followed are capable of delivering the expected results. Here it is not checking the final building it is checking whether the way we are working is likely to produce a good building.

Quality control is about inspection, measurement and detection of deviations. But even here relying too much on control may indicate that quality wasn't properly built into the earlier stages. in some cases over inspection might be a sign of poor planning or assurance, rather than a sign of a strength. All three dimensions have an impact on the success of a project, defined in this study as: Meeting time, cost, quality expectations and client satisfaction. However, there are external factors such as Budget constraints, contractor skills or evolving client needs can get in the way too, but other factors might influence project success too but they are not absolute.

Based on this literature discussion, the conceptual model is designed with the direct relationship three aspects of quality management practices as independent variables, and project success as the dependent variable. This is illustrated in Figure below.

- **Independent Variables (IVs):**
    - Quality Planning
    - Quality Assurance
    - Quality Control
- **Dependent Variable (DV):**
    - Project Success

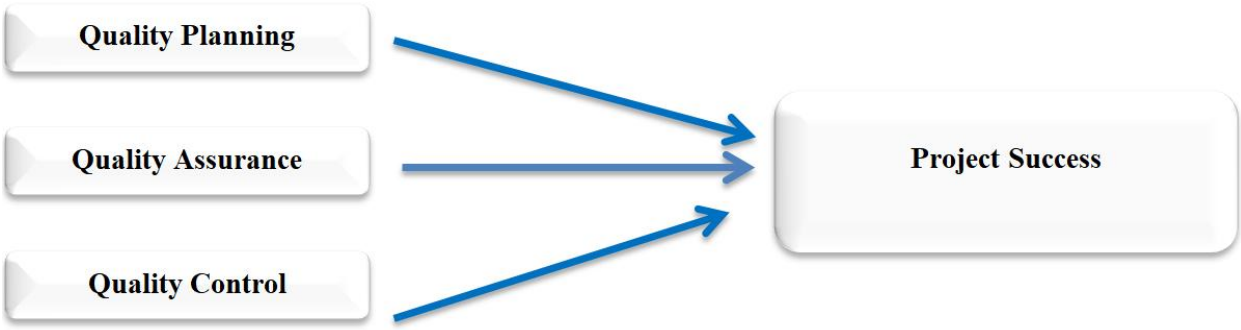


Figure 1: Conceptual framework of the study

Adopted from PMI, 2021 and Kerzner, 2022

The conceptual framework of this study was developed based on the Project Quality Management principles presented in the PMBOK Guide (PMI, 2021) and supported by project management literature (Kerzner, 2022). The framework assumes that Quality Planning, Quality Assurance, and Quality Control are key quality management practices that influence the success of government housing projects. Accordingly, these three constructs are treated as independent variables, while Project Success is considered the dependent variable.

Hypothesis Statement

1. Hypothesis (H1): There is a statically significant relationship between Quality planning and project success in government housing projects in Addis Ababa.

2. Hypothesis (H2): There is a statically significant relationship between Quality Assurance and project success in government housing projects in Addis Ababa.

3. Hypothesis (H3): There is a statically significant relationship between Quality Control and project success in government housing projects in Addis Ababa.

2.9. Literature Gaps

The reviewed studies despite geographical and methodological diversity they reveal a common theme among them which is:-

- They assume that quality management practices work the same everywhere.
- Most of them focus mainly on technical results such as time, cost, and reducing defects.

The literature gap is that the specific context of government housing construction in Addis Ababa and more narrowly in areas like Akaki Kality Subcity there appears to be limited empirical evidence. Existing studies tend to generalize across the construction sector without focusing on the unique characteristics of government housing projects, such as individualized client expectations, financing constraints, and variability in construction standards. But mostly they are based on studies from developed countries.

Because of these gaps, this study aims to examine how project quality management practices influence project success within a specific local context. It focuses not only on whether these practices are present, but also on how they are applied and how they interact with real-world challenges. it hopes to provide a more grounded understanding of the relationship between quality management and project outcomes in government housing construction.

CHAPTER THREE

3.1. Research Methodology

In this chapter the research methodology used for carrying out the study will be discussed. The Data analysis includes Research Design, Research Approach, source of data, data sampling technique, data collection, and data analysis procedure will be discussed with the respective explanation.

3.2. Research Design

Based on the aim of the research a research design is classified into three types, namely exploratory, descriptive, and explanatory (Kothari, 2014). Considering the nature of the problem under this study, explanatory research design was found to be the most suitable design for the present study. The primary focus was not only on describing the current practices of quality management in the projects, but also on analyzing if these practices affect project success. In other words, the study aimed at finding out the relationships between the variation of the QP, QA and QC and differences in project outcomes in the government housing projects in Addis Ababa.
An explanatory design is especially helpful when the researcher plans to explore the relationship between the variables and determine the impact that one variable can have on the other (Kothari, 2014). As seen in construction projects, quality management activities are often considered to assist in project success, but the nature and strength of these relationships can differ from project to project and organization to organization. The chosen design has created a structured framework for examining these relationships in the light of empirical evidence gathered from professionals actively engaged in project implementation and quality-related activities.
The data required for the work were taken using a questionnaire survey to project managers, site engineers, consultants, client representatives, quality assurance and quality control staffs, and operations managers in the government housing construction projects. The study used a cross-sectional design because the information was collected at a particular time and not over a long period. The approach was judged to be feasible as it would enable the researcher to obtain

participants' perceptions and experiences in the current project context whilst being time and resource efficient.

3.3. Research Approach

A quantitative research approach was used for the study, which examined the relationship between project quality management practices and project success. The quantitative approach is usually used when the goal is to measure the variables in numbers, look for trends in the data, and statistically test hypothesized relationships (Creswell, 2018). In this study, the I tried to discover how Quality Planning, Quality Assurance and Quality Control affect Project Success; thus, the numerical data gathered via structured questionnaires was considered appropriate to meet the research goals.

By adopting quantitative approach the responses were able to be analyzed systematically and relationships between the study variables were evaluated. Both direction and magnitude of the relationships were examined through the use of statistical techniques, including descriptive statistics, Pearson correlation analysis and multiple linear regressions. These techniques enabled the analysis to go beyond simple observation and create the link between the practices of quality management and the success of the project, as well as their ability to explain the project results.

Therefore a quantitative approach seems to be more appropriate for the research aims. It also helped to present the findings in a comprehensible and standard way, which made it easier to compare the various aspects of project quality management with their contribution to project success in the government housing projects in Addis Ababa.

3.4. Description of target population, sampling size, technique and procedure

3.4.1 Target population

In research, the target population refers to the complete group of individuals, objects, or elements that possess the characteristics relevant to a particular study and from which information is intended to be collected (Babbie, 2010). Identifying an appropriate target population is important

because the quality of the findings largely depends on the extent to which the selected respondents can provide information related to the research problem. A clearly defined population also helps ensure that the data collected are relevant to the objectives of the study.

The population for this research was professionals directly involved in the implementation and supervision of government housing building projects in Addis Ababa. These people hold roles that involve frequent involvement in quality-related activities and project performance monitoring. Therefor they were believed to be able to give informed opinions that link between project quality management practices and project success.

The study population consisted of 54 professionals working on the selected government housing building projects in Addis Ababa. Specifically the popultion included 11 project managers, 13 site engineers, 4 site supervisors and 22 other professionals, including consultants, client representatives, quality assurance and quality control professionals. These professionals were selected because their day-to-day responsibilities often involve activities such as establishing quality requirements, monitoring compliance with standards, conducting inspections, and evaluating project performance. Because these professionals interact with project quality issues throughout the project lifecycle, their responses were expected to provide valuable insights into the effectiveness of Quality Planning, Quality Assurance, and Quality Control practices.

3.4.2. Sample Size

In quantitative research one of the important steps is determining the appropriate sample size as it affects the validity, reliability and trustworthiness of the results (Creswell, 2014). Researchers when the population is large and studying of its member is impractical they will often choose a sample to make it significant with time, effort, and financial resources. In some cases the population is small enough and accessible which allows all members to be included on the investigation.

The population for this study consisted of 54 professionals in the selected government housing project. As the population is relatively small, I have decided not to draw a sample from the target population. Rather, all those who were eligible were studied. This was done to provide as much data as possible and to get information from each and every person directly involved in project quality management activities and project implementation.

A census approach was used as it allows for the entire population to be represented and removes sampling error which could occur if only part of the population is sampled (Sekaran & Bougie, 2016). By collecting data from all 54 professionals, the study was able to capture a range of experiences and perspectives regarding project quality management practices and project success.

Although a sample size of 54 may appear small compared to large-scale quantitative studies, it is considered appropriate for this study for several reasons. First, the study focused on a specific and specialized population, including project managers, site engineers, consultants, quality assurance and quality control professionals, client representatives, and site supervisors working on government housing projects in Addis Ababa. Due to the limited number of professionals within this specific context, the sample represents a substantial proportion of the target population.

Second, the adequacy of sample size for multiple regression analysis can be assessed using established statistical guidelines. According to Hair et al. (2019), a minimum of 10 to 15 observations per predictor variable is generally considered acceptable. Since this study included three independent variables (Quality Planning, Quality Assurance, and Quality Control), the minimum recommended sample size ranges from 30 to 45 observations. Therefore, the sample size of 54 exceeds this requirement.

Accordingly, given the census approach, the specialized nature of the study population, and the statistical adequacy for the analytical techniques employed, the sample size of 54 was considered sufficient to achieve the study objectives and generate reliable findings.

3.5. Study Area Description

The study was conducted in Addis Ababa, the capital city of Ethiopia and one of the country's significant urban development and construction centers. The city has experienced rapid population growth and urban expansion, which has led to an increased need for residential housing projects, new projects especially condominium developments that were started to solve housing problem.

The study was carried out, on the Akaki Kality Werku Site 5000 Housing Project located in Akaki Kality Sub-city. The project is a condominium housing development consisting of G+4 residential buildings. The project was chosen because it has a high degree of quality management activities related to construction finishing works, making it suitable for examining the effect of project quality management practices on project success.

The project is administered by the Addis Ababa Housing Development Corporation and executed by Abdi Bedada General Contractor. The construction work was officially started on April 24, 2018, with a planned completion period of 90 days. The project includes professionals such as engineers, supervisors, and technical staff who are directly involved in quality planning, quality assurance, and quality control processes.

The study area was purposively selected due to its relevance to the research objectives and the accessibility of sufficient data regarding project quality management practices and project performance indicators.

3.6. Data Source, Collection and Analysis Method

3.6.1. Data Source

Primary sources of data were used in the study to investigate the impact of project quality management practices on project success in the government housing projects in Addis Ababa. Primary data was obtained directly from professionals involved in the selected project, such as the project managers, site engineers, consultants, client representatives, quality assurance professionals, quality control professionals, operation managers, and site supervisors. These respondents were selected because of their direct contact with the project planning, implementation, monitoring and quality-related activities thus they were in a good position to give reliable information about the variables of the study. Data were collected using a structured questionnaire that was developed to collect the respondents' perceptions and experience on Quality Planning, Quality Assurance, Quality Control and Project Success. The use of a primary data was viewed as suitable since this would provide me with information that would be first-

hand and directly relevant to the objectives of the study and the specific context of the selected housing project

3.6.2. Data collection

To examine how project quality management practices influence project success, the study relied mainly on primary data collected through self-administered structured questionnaires. The questionnaires was developed based on an extensive review of relevant literature and the PMBOK framework, and it consisted of closed ended items designed to measure both the dependent and independent variables. Questionnaires were distributed to professionals directly involved in the Akaki Kality Werku Site 5000 Housing Project, including engineers, supervisors, quality assurance and quality control personnel, consultants, and project management staff. These individuals were considered appropriate respondents because they are actively engaged in day-to-day project activities and are likely to have firsthand experience with issues related to quality planning, quality assurance, quality control, project delays, rework, and overall project performance.

A close-ended questionnaire based on a Likert scale was used to gather responses. The choice of this instrument was mainly functional with respondents working under tight construction schedules; interviews alone may not have produced consistent or complete data. Questionnaires, on the other hand, made it easier to get comparable responses from a relatively large number of people within specific time frame. At the same time, relying only on questionnaires can sometimes limit deeper explanations from respondents, particularly on sensitive project problems. To minimize this restriction, the questions on the questionnaire were designed to be as clear and project-specific as possible.

A few secondary data were also used, like project documents and previous studies relevant to project quality management and project success in the construction industry. These materials were used to help give contextual and aid interpretation of the primary findings.

The items on the questionnaire were based on from existing literature related to project quality management practices and project success indicators. Before the actual data collection process,

the questionnaire was reviewed by my advisor to ensure that the questions appeared understandable and relevant to the objectives of the study.

3.6.3. Data Analysis Methods

The questionnaires were collected and the answers were sorted, coded, and inputted into SPSS for analysis. In the study it is aimed to investigate the effect of project quality management practices on project success, both descriptive and inferential statistical methods were employed.

Descriptive statistics**: -** frequency distributions, percentages, mean values, and standard deviations were employed to describe respondents' demographic characteristics and overall attitudes. These measures helped to give an accurate picture of the respondents perception of the quality management in the selected housing project.

Inferential statistical techniques: - were also used in the analysis to analyze the relationship between project quality management practices and project success variables. Regression analysis was then used to evaluate the contribution of quality to the extent of changes that it would cause on quality planning, quality assurance, and quality control. Predictive relationships between variables maybe suggested by regression analysis but it do not mean that they are necessarily accurate especially within a cross-sectional study where data are gathered in a single occasion.

Cronbach's Alpha was used to test the internal consistency of the data for reliability analysis for each of the questionnaire items. Most social science studies, consider an alpha value of 0.70 or higher to be good or generally to be considered acceptable (Joseph F. Hair et al., 2010). The results gathered were then presented using tables, charts, and explanatory discussions to make interpretation easier more manageable and related to the study's goal and objectives.

3.7. Model Specification

For this study, a multiple linear regression model was used to assess the influence of the quality management practices on the project success in government housing projects in Addis Ababa.

Multiple regression is used to measure the effects of many independent variables on one dependent variable, and can distinguish between the effects of all of the independent variables and the combined effect of the independent variables. Project success is used as the dependent variable and quality planning, quality assurance, and quality control are used as the independent variables in line with the study objectives and the conceptual framework derived from the quality management processes of the PMBOK. The regression model can provide a quantitative measure of the influence of the variation of each quality management practice on the variation in project success when the other factors are controlled. Then the general econometric model is formulated as:

$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$

Where:

Y = Project Success

X_1 = Quality Planning

X_2 = Quality Assurance

X_3 = Quality Control

a = Intercept (constant term)

Coefficients: b_1, b_2, b_3 = the effect of each independent variable

e = Error term for the effects of unobserved factors

3.8. Reliability and Validity Analysis

Validity refers to the extent to which a research instrument measures what it is intended to measure. In this study, the validity of the questionnaire was assessed through expert review and consultation with the thesis advisor, as well as professionals working in the construction sector. Their comments and suggestions helped improve the clarity, relevance, and appropriateness of the questionnaire items in relation to project quality management practices and project success variables.

Reliability is about consistency of the measuring instrument. A reliable instrument is expected to produce relatively consistent results when used under similar conditions. To assess the internal

consistency of the questionnaire items, Cronbach's Alpha reliability test was conducted using SPSS.

Cronbach's Alpha values ranging from 0.70 and above are generally considered acceptable in social science research (Joseph F. Hair et al., 2010). In this study, reliability analysis was conducted separately for the each of project quality practices and project success after the completion of data collection.

Therefore the reliability of the overall questionnaire was assessed using Cronbach's Alpha. As presented in below, shows the overall questionnaire, consisting of 24 items, produced a Cronbach's Alpha coefficient of 0.915. Since this value is greater than the recommended threshold of 0.70, the instrument demonstrates excellent internal consistency. Therefore, the questionnaire was considered reliable and appropriate for data analysis.

Reliability Statistics

Cronbach's Alpha	N of Items
.915	24

3.9. Ethical Considerations

To protect the privacy of the information supplied by participants, it is not mandatory for them to include their names and they can rest assured that their answers will be treated with the utmost confidentiality. In the questionnaire the objective of the study has been clearly expressed already. Also measures have been implemented to ensure that there is no misleading or deceptive content in the questionnaire. Furthermore, only voluntary individuals, who gave full consent, were sent the questionnaires.

CHAPTER FOUR

4.1. Data Presentation, Analysis and Interpretations

This chapter outlines the key discoveries, examinations regarding the study's participants. The primary data was collected from professionals who are involving in the project, consultants and client representatives. The information gathered from the participants was condensed, and both descriptive and inferential statistics were utilized for analysis purposes. Descriptive statistics were employed to show general details about the respondents and present an overview of their understanding of the study variables. The concise data of the study variables were then analyzed by using regression analysis with the help of SPSS version 27.0.1 application software.

4.2. Response Rate

A total of 54 questionnaires were handed out to respondents working in government housing projects in Addis Ababa. Interestingly all were returned which gives a full response rate of 100%. At face value that looks ideal and clean but it doesn’t indicate that data collection went smoothly I have to follow most respondents closely and some of the were highly cooperative. Since the sample size was small and I had to talk to each respondent on site there were no unreturned questionnaires and based on the screening no obvious response errors incomplete submissions were identified. In other words every questionnaire distributed ended being usable for analysis.

Overall the dataset appears complete and ready for further analysis, including descriptive statistics, correlation testing, and regression modeling without the usual concern of missing data or non-response bias interfering with the findings.

4.3. Demographic Profile of Respondents

The respondents were requested to state their sex, age, educational background, Current work position and level of experience. Based on the responses the total tally of the demography is listed below.

Table 1: Demographic profile of respondents, Sex

1. Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	31	57.4	57.4	57.4
	Male	23	42.6	42.6	100.0
	Total	54	100.0	100.0	

Source: SPSS output, 2026

The gender composition of the respondents shows a slight predominance of females, who account for 31 participants (57.4%), males represent 23 respondents (42.6%) out of the total 54 valid questionnaires. In survey-based studies, uneven gender distribution is not uncommon and does not automatically indicate bias, especially when the research is not explicitly gender-dependent. As Saunders, Lewis, and Thornhill (2019) note, what matters more in quantitative survey research is the adequacy of the sample size and the representativeness of respondents relative to the target population, rather than perfect proportional balance across demographic categories.

Table 2: Demographic profile of respondents, Age

2. Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-30	35	64.8	64.8	64.8
	31-40	14	25.9	25.9	90.7
	41-50	5	9.3	9.3	100.0
	Total	54	100.0	100.0	

Source: SPSS output, 2026

The age profile of respondents shows a clear concentration in the younger working group. Out of the majority of the total 54 participants are in the age range 20–30 and there are 35 respondents (64.8%). This indicates that the employees engaged in the selected housing project are mainly young professionals, possibly indicative of the overall labor market composition of the construction industry in Addis Ababa, where younger people are more likely to have site-based or operational roles.

The second age group, aged 31–40, consists 14 respondents (25.9%), bringing the cumulative percentage to 90.7%. This segment of the middle aged is composed of people who are becoming more technical literate responsibilities.

Few respondents, 5 individuals (9.3%), are in the age group 41–50, reaching a cumulative total of 100%. This limited reduced number of older respondents' maybe a reflection of decreased involvement at the senior level, or possibly a reduced involvement of senior personnel in day-to-day questionnaire-based data collection. Perhaps also senior staffs were less available during the survey period, though this is an assumption not a confirmed pattern.

Overall, the distribution is somewhat skewed toward younger respondents, which is not unusual because in construction-related studies participation at field-level is usually dominated by younger age groups. As noted in survey methodology discussions by Saunders, Lewis, and Thornhill (2019), such demographic skewness does not necessarily weaken the study, provided the sample still captures the relevant perspectives of the target population.

Table 3: Demographic profile of respondents, educational status

3. Indicate your educational status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Degree	37	68.5	68.5	68.5
	Diploma	6	11.1	11.1	79.6
	Masters and above	11	20.4	20.4	100.0
	Total	54	100.0	100.0	

Source: SPSS output, 2026

When compared to educational level of the respondents the data seems to be shifting towards degree holders. Of the 54 people who participated in the study included in the study, 37 respondents (68.5%) reported holding a bachelor's degree. That is a pretty high proportion, and it may indicate that government housing projects in Addis Ababa rely considerably on professionally trained staffs.

A much smaller portion of the sample, 6 respondents (11.1%), held diploma-level qualifications. While the number is relatively low, diploma holders are still likely to play practical and operational roles within construction projects especially in site activities that depend more on applied experience than formal academic specialization alone.

On the other hand 11 respondents (20.4%) indicated that they possessed a master's degree or qualifications above that level, which totals 100%. The presence of postgraduate-level professionals could point toward increasing academic and managerial involvement in construction project environments particularly in areas connected to planning, quality management, contract administration or project supervision.

The overall impression is that almost 90% of the respondents have at least a degree qualification. In that respect it might enhance the believability of the results of the survey, because people who have received more education are more likely to be aware structured project producers relating to processes, documentation and quality. However education does not necessarily translate into effective project performance. In construction sometimes, practical field experience can be as important as formal qualifications.

Table 4: Demographic profile of respondents, year of experience

4. Year of experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11-15 years	6	11.1	11.1	11.1
	5-10 years	20	37.0	37.0	48.1
	Above 15 years	2	3.7	3.7	51.9
	Less than 5 years	26	48.1	48.1	100.0
	Total	54	100.0	100.0	

Source: SPSS output, 2026

The profile of work experience of the respondents is somewhat mixed picture, although the data it seems to be more oriented towards people who are still fairly in the beginning of their careers. The largest group consisting of 26 respondents (48.1%), reported having less than five years of work experience. This could reflect the employment trend for the construction industry in Addis Ababa, where youth professionals and recently recruited workers may often constitute a large percentage of the population of the workforce.

A total of 20 respondents (37.0%), had 5–10 years of experience accounted bringing the cumulative percentage to 48.1%. Another portion of the respondents, 6 individuals (11.1%), reported having between 11 and 15 years of experience. This group can include professionals who have gained sufficient experience to be aware of common issues that occur in repetitive project challenges such as to quality control, scheduling pressure, or contractor coordination.

Of the 2 respondents (3.7%) who had over 15 years of experience. Highly experienced professionals are somewhat under-represented. It might indicate that there are fewer senior experts in the operational positions across the selected projects, but it may also be a matter of the construction industry's staff turnover. Overall, the results indicate that the workforce is relatively young in terms of professional experience. So maybe exposure to fewer complex quality-related topics can sometimes lead to inconsistent approaches when addressing matters.

As noted by Harold Kerzner (2022), experience remains an important factor in project decision-making, particularly in environments where uncertainty, coordination, and quality performance are closely interconnected.

Table 5: Demographic profile of respondents, position in the organization

5. Position in the organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other	22	40.7	40.7	40.7
	Project Manager	11	20.4	20.4	61.1
	Quality officer	4	7.4	7.4	68.5
	Site Engineer	13	24.1	24.1	92.6
	Supervisor	4	7.4	7.4	100.0
	Total	54	100.0	100.0	

Source: SPSS output, 2026

The respondents within the study include a wide range of roles in the organizational roles within government housing projects in Addis Ababa, which could give some insights of different levels of project involvement. The highest percentage of the categories presented, was “Other”, representing 22 respondents (40.7%). In this study, that category includes positions such as Office Engineers, Project Coordinators, Project Administrators, and Operation Managers. The relatively high number in this group perhaps reflects the multidisciplinary nature of construction projects, where responsibilities are often distributed across several supporting and managerial roles rather than concentrated in a few formal titles alone.

Second largest group was site engineers with 13 respondents (24.1%), given their close involvement in technical supervision, site coordination, and implementation activities; their participation is likely to contribute practical insight into quality-related practices and project performance issues on construction sites.

Eleven (20.4%) respondents were project managers. They are generally in charge of planning, coordination, monitoring, and decision-making throughout the project lifecycle. Their responses might include wider management view points, especially for quality planning and project success factors.

The other smaller proportions were seen among quality officers and supervisors, each accounting for 4 respondents (7.4%). Despite the fact that there are only there a small number of these groups they still have roles closely connected with project implementation and quality control.

4.4. Descriptive Results and Analysis

Descriptive measures were employed to describe the input pattern of the participants, including the calculation of mean and standard deviation. The results and their interpretations are outlined hereafter. A table presents the frequency of responses evaluated through the questionnaire. This descriptive statistics table organizes sections of the questionnaire into distinct variables, followed by computation of the survey's mean value and its corresponding standard deviation. The mean signifies the central tendency, while the standard deviation indicates variability from this average value. It shows whether the responses are in harmony with one another or scattered and can show whether the data will indicate to any significant conclusion.

Table 6: Descriptive Statistics

Descriptive Statistics						
	N	Min	Max	Mean	Std. Deviation	Range
Quality Planning	54	1	5	3.91	0.99	4
Quality Assurance	54	1	5	3.97	0.95	4
Quality Control	54	1	5	3.96	0.90	4
project Success	54	1	5	3.98	0.98	4

Source: SPSS output, 2026

The descriptive statistics result for the quality planning variable shows that the mean value of the respondents' response is 3.91 with standard deviation 0.99 which is above the average value of 2.5 in the five-point Likert scale measurement. Therefore, it is visible that the mean is above the average with standard deviation less than 1, indicating consistency in the responses of the respondents towards quality planning practices in the studied projects.

Respondents of this survey have above average responses towards quality assurance with mean value of 3.97 and standard deviation 0.95 which suggests that the quality assurance practices implemented in the projects are adequately practiced and the organizations have given emphasis to assuring quality during project execution.

On the other hand, for the quality control variable, the gathered data shows that the mean value of the respondents' response on the Likert scale questionnaire is 3.96 which is still above the average value with standard deviation 0.87 indicating that the organizations have also given considerable priority towards quality control practices in construction projects.

When it comes to the responses regarding project success, the mean value is also above the average with a score of 3.98 which indicates that the project success criteria in the studied projects are generally achieved. The standard deviation of the data is 0.98, still below 1, showing the consistency of the data gathered from respondents.

As the data suggests, all variables have mean values above the average value of the Likert scale and standard deviation values below 1, which demonstrates that the organizations have quality

management practices integrated within their project management activities. Moreover, the findings indicate that quality planning, quality assurance, and quality control practices have positive contributions towards the success of private housing building projects in Addis Ababa.

As discussed by Harold Kerzner (2022), perceptions related to project quality and success are rarely shaped by a single factor alone rather they tend to emerge from the interaction of planning quality, control mechanisms, organizational coordination, and implementation practices throughout the project lifecycle.

4.5. Correlation Test

The purpose of the correlational test was to assess the magnitude and orientation of the association between the variables. Correlation analysis explores connections between variables and provides insights into both the strength and direction of their relationship. This study aimed to explore the role of quality management practices (Quality Planning, Quality Assurance, and Quality Control) and their relationship in project success in construction projects. There are varies types of correlation tests but for this research, the Pearson correlation test was chosen because it is better suited for analyzing raw data obtained through survey questionnaires.

Table 7: Correlation Matrix

Correlations

		QP	QA	QC	PS
QP	Pearson Correlation	1	.536**	.520**	.492**
	Sig. (2-tailed)		<.001	<.001	<.001
	N	54	54	54	54
QA	Pearson Correlation	.536**	1	.728**	.837**
	Sig. (2-tailed)	<.001		<.001	<.001
	N	54	54	54	54
QC	Pearson Correlation	.520**	.728**	1	.755**
	Sig. (2-tailed)	<.001	<.001		<.001
	N	54	54	54	54
PS	Pearson Correlation	.492**	.837**	.755**	1
	Sig. (2-tailed)	<.001	<.001	<.001	
	N	54	54	54	54

**. Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS output, 2026

Pearson correlation analysis was used to analyze the relationship between quality management practices and project success in government housing projects in Addis Ababa. The analysis specifically assessed the association between the independent variables Quality Planning (QP), Quality Assurance (QA), and Quality Control (QC) and the dependent variable.

The correlation analysis results showed that all the independent variables were positive and statistically significant relationships with project success. This means that enhancements in quality management practices are associated with improvements in project success.

The results revealed that there was a moderate positive correlation between Quality Planning and Project Success ($r = 0.492$, $p < .001$). This implies that good quality planning practices in the work place helps to contribute to positively to the successful completion of government housing projects. Although the relationship is moderate, it still demonstrates that proper planning of quality standards, procedures, and project requirements plays an important role in enhancing project outcomes.

Likewise, there was a very high positive correlation between Quality Assurance and Project Success ($r = 0.837$, $p < .001$). This indicates that quality assurance practices such as continuous monitoring, adherence to standards, and systematic quality evaluation significantly improve the likelihood of project success. The high correlation coefficient indicates that Quality Assurance is strongly associated with better project performance.

Project success was significantly and positively correlated with quality Control ($r = 0.755$, $p < .001$). This finding shows that activities related to inspection, defect identification, and correction of project errors contribute substantially to achieving successful project outcomes. The strong association demonstrates the importance of maintaining effective quality control mechanisms throughout the project implementation process.

The significance values ($p < .001$) for all variables are below the acceptable significance level of 0.05, confirming that the relationships observed are statistically significant and not the result of random chance. Therefore, the study confirms that quality management practices have a

meaningful contribution to project success in government housing building projects in Addis Ababa.

According to Jacob Cohen (1988), correlation coefficients ranging from 0.10 to 0.29 indicate weak relationships, values between 0.30 and 0.49 indicate moderate relationships, and values of 0.50 and above indicate strong relationships. Based on this classification, the findings of the study indicate that Quality Assurance and Quality Control have strong positive relationships with Project Success, but Quality Planning has a moderate positive relationship with Project Success.

4.6. Regression Analysis Results

Regression analysis is concerned with measuring and explaining the relationship between a given variable (usually called the dependent variable) one or more other variables (known as independent variable(s)). It is used to understand the relationship variables and predict the value of one variable based on the other variable.

So tests were conducted to assess the fit of the collected data with the specified model in multiple linear regression. Evaluating these assumptions is important as any violations can impact the validity of using multivariate statistical techniques. While there are numerous assumptions to take into account, this discussion will focus on those that can be readily tested using SPSS.

4.6.1. Multicollinearity

Multi-collinearity arises in regression when the independent variables are more strongly associated with each other than with the dependent variable. According to Hair (2010), a correlation coefficient below 0.90 may not result in significant multi-collinearity issues.

Table 8: Collinearity Statistics

Model	Collinearity Statistics		
		Tolerance	VIF
	Quality Planning	0.677	1.478
	Quality Assurance	0.436	2.295
	Quality Control	0.446	2.240
Dependent Variable: Project Success			

Source: SPSS output, 2026

Multicollinearity was tested using tolerance and Variance Inflation Factor (VIF) values. The tolerance values ranged from 0.436 to 0.677, all of which are above the minimum acceptable which is of 0.10. Similarly, the VIF values ranged from 1.478 to 2.295, remaining well below the maximum acceptable value of 10. These findings suggest that multicollinearity is not a serious concern among the independent variables, and the predictors are sufficiently independent for regression analysis.

4.6.2. Test of Normality

The linearity assumption was assessed through correlation and residual analysis results. The findings indicated a positive linear relationship between the independent variables and project success. In addition, the residual plots did not show a slight deviations from linearity. Therefore, the data appears suitable for linear regression analysis.

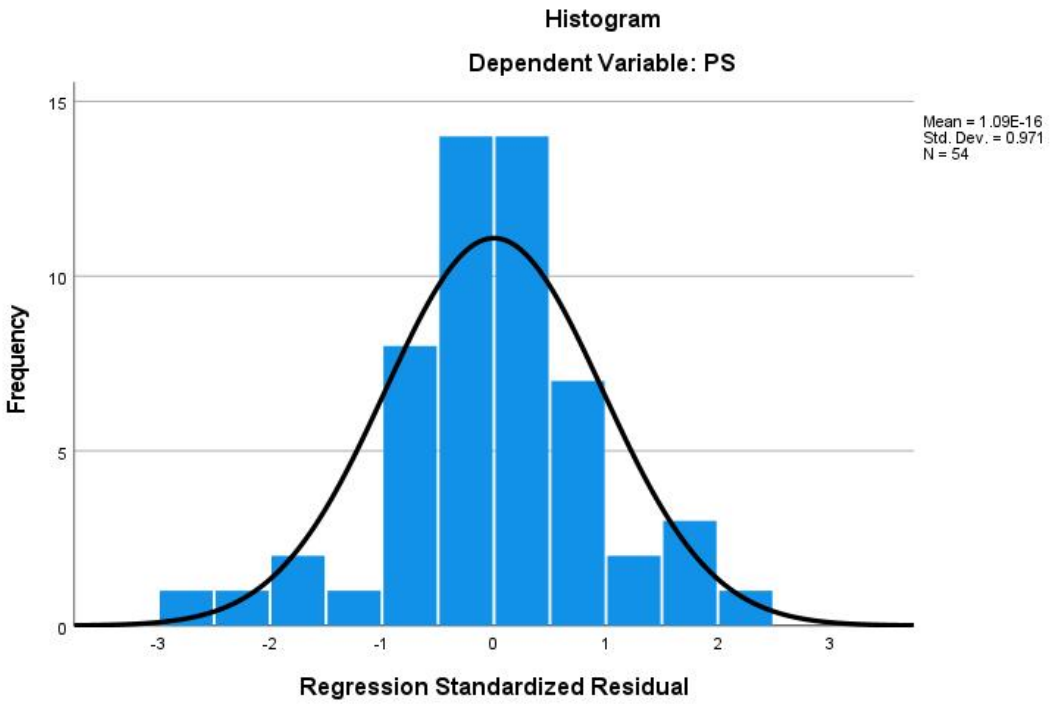


Figure 2: Point Plot and Frequency Distribution of Standardized Residuals

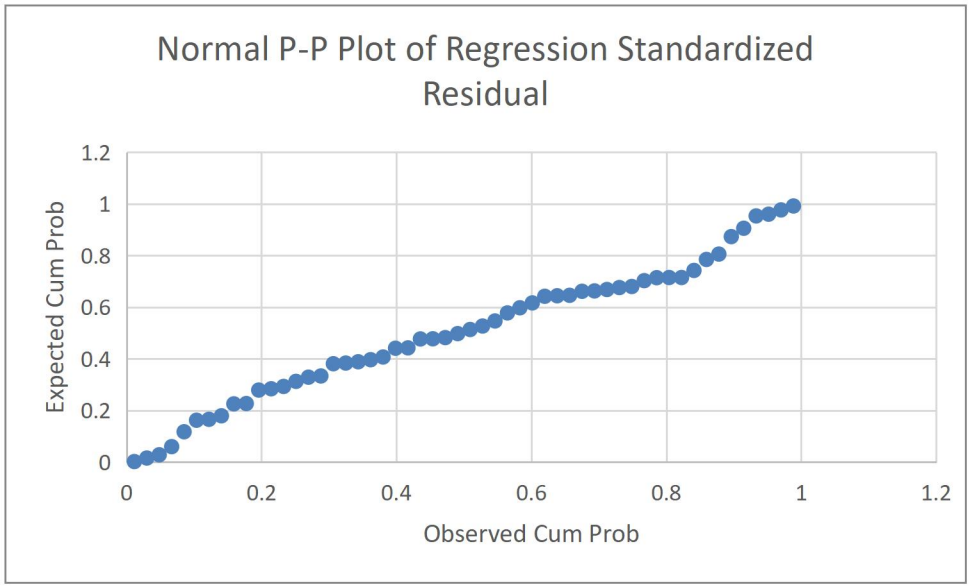


Figure 3: Scatter plot for Linearity Test

The Normal P–P Plot of regression standardized residuals was used to assess the normality assumption. The plotted points generally followed the diagonal reference line with only slight deviations observed in some areas. This suggests that the residuals are approximately normally distributed and that the normality assumption for regression analysis is reasonably satisfied.

4.7. Multiple Linear Regression Analysis

Multiple linear regressions is used to determine the contribution of the independent variables in explaining the dependent variable. It is important to assess the goodness of fit of the model because it shows how close the model is with the data. One effective way is to do this is to use R2, which signifies the proportion of variance in the outcome that is accounted for by the model. In other words, it quantifies the percentage of variation in the outcome that can be clarified by studying its construct model.

Table 9: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	0.864	0.746	0.731	0.41
a. Predictors: (Constant), Quality Planning, Quality Assurance and Quality Control				
b. Dependent Variable: Project success				

Source: SPSS output, 2026

The model summary gives details about how well the independent variables explain variations in project success. As shown in the above Table the regression model produced a multiple correlation coefficient of R = 0.864, indicating a strong positive relationship between Quality Planning, Quality Assurance, Quality Control, and Project Success. In practice this means projects that demonstrate stronger quality management practices leads to a higher levels of project success.

The coefficient of determination ($R^2 = 0.746$) suggests that approximately 74.6% of the variation in Project Success can be explained by the three quality management dimensions included in the model. This is a relatively high proportion, which may indicate that quality management practices play an important role in determining project outcomes in government housing projects. But about 25.4% of the variation remains unexplained; implying that other factors which are not included in the analysis such as leadership effectiveness, resource availability, stakeholder involvement, or external project conditions could also influence project success.

The Adjusted R^2 value of 0.731 is very close to the R^2 value of 0.746, which suggests that the model provides a reliable explanation of Project Success. This means that even after considering the number of independent variables included in the analysis, the model still explains a large proportion of the variation in project success. In addition, the standard error of the estimate (0.41) is relatively small, indicating that the predicted values are reasonably close to the actual values observed in the study. Overall, these results suggest that the regression model fits the data well and can be used to explain the relationship between project quality management practices and project success.

Table 10: The ANOVA test

ANOVA					
Model	Sum of Squares	Df	Mean Square	F	Sin. (p-value)
Regression	24.103	3	8.034	48.923	<0.001
Residual	8.211	50	0.164		
Total	32.315	53			
a. Dependent Variable: Project success					
b. Predictors: (Constant), Quality Planning, Quality Assurance and Quality Control					

Source: SPSS output, 2026

The ANOVA test was conducted to determine whether the regression model as a whole significantly predicts Project Success. The results show an F-statistic of 48.923 with a significance level of $p = 0.000$. Since the p-value is less than the commonly accepted starting point of 0.05, the null hypothesis that the model has no explanatory power can be rejected.

What this means is that the combined effect of Quality Planning, Quality Assurance, and Quality Control appears to have a statistically significant relationship with Project Success. The model performs considerably better than a model with no predictors, suggesting that the selected quality management variables contribute meaningfully to explaining differences in project outcomes.

Although the ANOVA result confirms the overall usefulness of the regression model, it does not indicate which individual variables are responsible for the observed effect. For that reason, the coefficient analysis is necessary to examine the contribution of each predictor separately. (Field, 2018) notes that a significant F-test provides evidence that at least one predictor variable contributes significantly to explaining variation in the dependent variable.

4.8. Coefficients of the Multiple Regression Analysis

Table 11: Coefficient of multiple regression

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	p-value
	B	Std. Error	Beta		
Constant	-0.984	0.447		-2.199	0.033
Quality Planning(QP)	0.005	0.100	0.004	0.048	0.926
Quality Assurance(QA)	0.784	0.139	0.611	5.658	0.000
Quality Control(QC)	0.463	0.161	0.308	2.884	0.006
a. Dependent Variable: Project Success					

Source: SPSS output, 2026

The coefficient analysis was carried out to examine the individual effect of each quality management dimension on Project Success while controlling for the influence of the other variables. The findings present an interesting pattern.

Quality Assurance showed a positive and statistically significant effect on Project Success ($B = 0.784$, $\beta = 0.611$, $p < 0.001$). Among all predictors, it recorded the highest standardized beta coefficient, suggesting that it is the strongest contributor to project success in this study. This

implies that activities such as continuous monitoring, adherence to quality standards, regular audits, and process improvement initiatives are closely associated with better project outcomes.
Quality Control also demonstrated a positive and significant influence on Project Success (B = 0.463, β = 0.308, p = 0.006). The result suggests that effective inspection, testing, and verification procedures may help reduce defects and improve the overall performance of construction projects. Although its contribution is smaller than that of Quality Assurance, the relationship remains statistically meaningful.
A different result appeared for Quality Planning. While the coefficient was positive (B = 0.005), the relationship was not statistically significant (β = 0.004, p = 0.926). The extremely high p-value indicates that Quality Planning does not appear to have an independent effect on Project Success within this regression model. One possible explanation is that planning activities may influence project outcomes indirectly through effective quality assurance and quality control practices rather than exerting a direct impact on success. Another possibility is that planning practices were implemented relatively consistently across projects, leaving little variation to explain differences in project performance.

Based on the unstandardized coefficients, the regression equation is:

PS=-0.984+0.005(QP)+0.784(QA)+0.463(QC)+e

The equation indicates that, holding other variables constant, a one-unit increase in Quality Assurance is associated with a 0.784-unit increase in Project Success, while a one-unit increase in Quality Control is associated with a 0.463-unit increase in Project Success. The effect of Quality Planning is negligible and statistically insignificant. Overall, the findings suggest that Quality Assurance and Quality Control are the key quality management practices associated with successful government housing projects in Addis Ababa.

4.8.1. Quality Planning and Project Success

The regression analysis showed that Quality Planning did not have a statistically significant effect on Project Success (β = 0.004, p = 0.926). Although the relationship was positive, the

coefficient was extremely small and the significance value exceeded the 0.05. This suggests that Quality Planning alone does not appear to contribute meaningfully to Project Success in the sampled government housing building projects. One possible explanation is that planning activities may not directly influence project outcomes unless they are effectively implemented through quality assurance and quality control practices. Consequently, the hypothesis proposing a significant relationship between Quality Planning and Project Success was not supported.

- Although respondents reported a high level of implementation of Quality Planning (Mean = 3.91), the multiple regression analysis indicated that its direct effect on Project Success was not statistically significant ($\beta = 0.004$, $p = 0.926$). This suggests that while quality planning practices are generally carried out in the selected government housing project, they do not independently explain variations in project success when Quality Assurance and Quality Control are considered simultaneously.

  One possible explanation is that preparing quality plans alone does not guarantee successful project outcomes unless those plans are effectively implemented, monitored, and continuously improved during project execution. In construction projects, project success depends not only on the existence of quality plans but also on the effectiveness of quality assurance activities and quality control practices that ensure compliance with established standards. Consequently, Quality Assurance and Quality Control may have a stronger and more direct influence on project success than Quality Planning.

  Another possible explanation is the limited variation in respondents' ratings of Quality Planning. Since most respondents gave similarly high ratings, the variable provided little variation to explain differences in project success. Therefore, although Quality Planning is recognized as an essential foundation for project quality management, its contribution may be indirect, supporting Quality Assurance and Quality Control rather than directly influencing project success.

4.8.2. Quality Assurance and Project Success

The findings indicate that Quality Assurance has a positive and statistically significant effect on Project Success ($\beta = 0.611$, $p < 0.001$). Among all the predictors included in the model, Quality Assurance recorded the highest standardized coefficient, suggesting that it is the strongest determinant of Project Success. This result may imply that activities such as monitoring compliance with quality standards, conducting audits, and continuously improving project processes contribute substantially to successful project outcomes. Therefore, the hypothesis stating that Quality Assurance positively influences Project Success was supported.

4.8.3. Quality control and Project Success.

The regression results also showed that Quality Control has a positive and statistically significant effect on Project Success ($\beta = 0.308$, $p = 0.006$). The positive coefficient suggests that improvements in quality control practices are associated with higher levels of project success. Effective inspection, testing, and verification procedures may help identify and correct defects before they affect project performance which improves the chance of achieving project objectives. As the significance value is below the 0.05 level, the hypothesis proposing a positive relationship between Quality Control and Project Success was supported.

4.9. Summary of the Research Hypothesis Test Result

Table 12: Hypothesis Test Results

	Hypothesis	**result**
H1	Quality planning is likely to have a positive effect on project success.	Not- Supported

H2	Quality assurance appears to have a positively influence on project success.	Supported
H3	Quality control is expected to have a positive relationship with project success.	Supported

4.9.1. Discussion of the Non-Significant Effect of Quality Planning on Project Success

A. Quality management effect is context dependent (context- specific explanation)

Quality practices alone are insufficient without effective implementation system. Prajogo & Sohal (2004) found that Total Quality Management (TQM) practice do not always directly improve organizational performance unless properly integrated into operations.

The finding that quality planning does not have a statistically significant direct effect on project success suggests that, within the studied construction context, formal quality planning practices may not translate effectively into project outcomes. In many developing construction environments, including urban housing projects, quality planning is often implemented as a contractual or documentation requirement rather than a continuously enforced operational practice. In such contexts, project success is frequently driven more by immediate constraints such as cost control, schedule pressure, material availability, and contractor capability than by formalized quality planning procedures. As a result, even when quality planning is present at the planning stage, its practical influence on execution and final delivery may be limited.

So quality practices alone are insufficient without effective implementation system.

B. Quality management does not always directly predict performance (methodological and measurement related explanation)

Nair (2006) (meta-analysis on TQM outcomes) found mixed and inconsistent relationships between quality management practices and performance outcomes across studies.
The non-significant result may also be partially attributed to methodological factors. First, the measurement of quality planning in survey-based studies often relies on perceptual indicators,

which may not fully capture the depth, consistency, or actual implementation level of quality planning practices.

Second, respondent bias may occur, particularly where project managers or engineers report what is formally expected rather than what is actually practiced on-site. Additionally, limited sample size or variability among responses can reduce statistical power, making it more difficult to detect significant relationships even when a weak or moderate relationship exists.

Therefore the effect is not universally significant and depends on context and implementation maturity

C. Theoretical explanation (construction industry evidence)

Koskela (2000) in construction management theory emphasizes that traditional management tools often fail in real construction environments due to fragmentation and variability.

So from a theoretical perspective, the result does not necessarily contradict project management principles but rather suggests that the effect of quality planning on project success may not be direct.

According to project management frameworks such as the PMBOK Guide, quality management is designed to ensure that project deliverables meet required standards; however, its influence on overall project success is often mediated through execution quality, process control, and reduction of rework rather than acting as an isolated direct predictor of success.

Similarly, Kerzner (2017) emphasizes that project success is a multidimensional construct influenced by integrated performance across scope, time, cost, and stakeholder satisfaction. In such a framework, quality planning contributes as a supporting system rather than a standalone determinant.

Therefore, it is reasonable that quality planning operates indirectly through other project variables rather than exerting a statistically detectable direct effect.

So we can conclude that planning tools alone do not guarantee project success in construction

D. Comparison with existing Literature (developing country context)

Damoah & Akwel (2017) (public sector construction in developing contexts) highlight that project success is more strongly driven by cost control, resource constraints and contractor capability than formal planning system.

Studies in construction management have reported that in developing or resource-constrained environments, traditional success factors such as cost and schedule performance often outweigh formal quality planning practices in determining overall project outcomes. In such cases, quality management systems may exist but are not fully institutionalized in day-to-day construction operations.

Project management literature has acknowledged that the relationship between quality management and project success is not always direct and may vary depending on organizational maturity, regulatory enforcement, and contractor capability.

For example, Project Management Institute (PMI, 2021) notes that quality management contributes to value delivery through system integration rather than isolated planning activities, reinforcing the idea that its effect may be indirect rather than directly measurable in regression models.

In developing economies structural constraints weaken the effect of formal management practices.

To generalize it The finding aligns with prior studies which suggest that quality management practices do not always exhibit a direct significant effect on project performance, particularly in construction environments where implementation gaps and contextual constraints are prevalent (Prajogo & Sohal, 2004; Nair, 2006; Koskela, 2000). Similarly, research in developing country contexts indicates that project outcomes are often more strongly influenced by cost, schedule pressures, and resource limitations than by formal planning systems (Damoah & Akwei,2017).

CHAPTER FIVE

5.1. Findings, Conclusions and Recommendations

In this chapter, the synthesis of key findings, their respective conclusions and potential suggestions are outlined. The primary aim of the research is to evaluate the impact of QMP on project success in government housing construction sector in Addis Ababa, Ethiopia. Theoretical and practical definitions are structured to spotlight specific areas influencing QMP. Following the identification and explanation of these points, primary data was gathered using Likert scale questionnaires. Responses from the survey are condensed in the study's descriptive outcomes. As per the conceptual framework employed in this research, it is established that QMP's effect hinges on three independent variables.

5.2. Summary of Major Findings

In this study the Effects of Quality Management Practice on Project Success in government housing construction sector in Addis Ababa Ethiopia was investigated. Based on the data analyses, major findings of the results are summarized as follows:

Objective 1: To examine the effect of Plan Quality Management practices on project success and the achievement of defined project objectives.

The descriptive findings indicate that Quality Planning was practiced at a relatively satisfactory level in the surveyed government housing projects, with an average mean score of 3.91. Respondents generally agreed that quality objectives were defined before project execution, quality standards were communicated, and quality-related risks were identified during planning activities. This may suggest that project teams recognize the importance of planning quality requirements before implementation begins.

The correlation analysis revealed a moderate positive relationship between Quality Planning and Project Success ($r = 0.492$, $p < 0.001$). In practical terms, projects with stronger planning practices tended to report better performance outcomes. While the relationship was statistically

significant, its magnitude was noticeably lower than those observed for Quality Assurance and Quality Control, which may indicate that planning alone is not sufficient to guarantee project success.

When we look at the regression analysis it produced a different picture. Although the coefficient was positive (B = 0.005), the effect was not statistically significant (p = 0.926). This finding appears to suggest that Quality Planning does not independently predict Project Success One possible explanation is that planning creates a foundation for project activities, but its benefits are only realized when plans are effectively implemented, monitored, and controlled throughout the project lifecycle. As a result, the contribution of Quality Planning may be indirect rather than direct in determining project success.

Objective 2: To assess the contribution of Perform Quality Assurance practices to stakeholder satisfaction and project process efficiency.

The findings reveal that the level of application of the Quality Assurance practices is relatively high, the scores obtained average 3.97. A majority of respondents reported that there was regular supervision, continuous monitoring, and management support during project execution and periodic reviews. These results indicate that a lot of work is being paid out to quality assurance during project execution. Quality Assurance was the practice most highly correlated with Project Success among all the quality management practices. The correlation coefficient ($r = 0.837$, $p < 0.001$) shows a very strong positive correlation, with projects which had more effective quality assurance practices being far more likely to have successful results. The results indicate that activities like routine inspections, compliance monitoring, and preventive measures for quality seem to have an important role in influencing project performance. This is confirmed by the regression results. Quality Assurance was found to be statistically significant in Project Success ($B = 0.784$, $p < 0.001$) and it obtained the highest value for the contribution of the predictors in the model. This discovery could indicate that quality during the project may have a greater impact than just planning for it. It seems that project objectives can be achieved when project teams regularly track work processes, quickly deal with deviations, and encourage compliance with standards.

Objective 3: To analyze how Control Quality practices ensure deliverable conformity and support time and cost performance.

The descriptive statistics indicate that Quality Control was practiced at a relatively high level, with a mean score of 3.96. Respondents generally agreed that inspections were conducted regularly, defective work was corrected quickly, materials were tested against required standards, and corrective actions were implemented whenever quality problems were identified.

These responses suggest that project organizations place considerable emphasis on controlling and verifying quality throughout project execution.

Correlation analysis revealed a strong positive relationship between Quality Control and Project Success ($r = 0.755$, $p < 0.001$). This finding indicates that projects characterized by stronger quality control mechanisms tended to achieve better outcomes. In construction projects, where even small defects can lead to delays, rework, or additional costs, such a relationship is perhaps not surprising.

The regression analysis further showed that Quality Control had a positive and statistically significant effect on Project Success ($B = 0.463$, $p = 0.006$). Although its contribution was smaller than that of Quality Assurance, the effect remained meaningful. The result may suggest that systematic inspections, testing procedures, and timely corrective actions help reduce construction errors and improve overall project performance. In practice, identifying and addressing problems before they escalate is likely to enhance both project quality and stakeholder satisfaction, contributing to successful project completion.

Objective 4: To evaluate the combined effect of quality management practices on project success in government housing building projects in Addis Ababa.

To examine the combined influence of Quality Planning, Quality Assurance, and Quality Control on Project Success, a multiple linear regression analysis was conducted. The overall model produced a correlation coefficient of $R = 0.864$, indicating a strong positive relationship between the set of quality management practices and project success. This suggests that projects characterized by stronger quality management activities generally tend to achieve better performance outcomes. The coefficient of determination ($R^2 = 0.746$) showed that approximately 74.6% of the variation in Project Success can be explained by the three quality management

practices included in the model. This is a considerable proportion and may suggest that quality management plays a central role in determining the success on government housing projects in Addis Ababa. At the same time, around 25.4% of the variation remains unexplained. This is not unusual in project environments, where factors such as resource availability, leadership capability, stakeholder engagement, regulatory challenges, and unexpected site conditions can also influence project outcomes.

A similar pattern can be observed in the Adjusted R^2 value of 0.731, which remains close to the original R^2 value. The relatively small difference between these two statistics suggests that the explanatory power of the model is not simply a result of adding more predictors. Instead, the selected variables appear to contribute meaningful information in explaining project success. In addition, the standard error of the estimate (0.41) is fairly low, indicating that the predicted values generated by the model are reasonably close to the actual observations collected from respondents.

The ANOVA results provide further support for the model. The regression model was found to be statistically significant ($F = 48.923$, $p < 0.001$), meaning that the quality management practices, when considered together, have a significant effect on Project Success. Put differently, the model performs much better than a model that contains no predictors at all. While the analysis does not imply that every quality management practices contributes equally, it does suggest that the collective influence of planning, assurance, and control activities is closely associated with successful project outcomes. Taken together, these findings appear to indicate that quality management practices are not isolated activities carried out at different project stages. Rather, they work as an interconnected system in which planning establishes expectations, assurance promotes compliance with standards, and control mechanisms identify and correct deviations. When these practices function effectively alongside one another, projects are more likely to achieve their intended objectives in terms of quality, stakeholder satisfaction, and overall performance.

5.2.1. Interpretation of the Quality Planning Results

Although respondents rated Quality Planning highly (M = 4.07), the regression analysis indicated that Quality Planning did not have a statistically significant effect on Project Success (β

= 0.004, p = 0.926). At first glance, this result may seem unexpected because project management literature generally identifies quality planning as a fundamental element of successful project delivery. However, the finding appears to suggest that the existence of quality planning alone is not sufficient to improve project outcomes.

One possible explanation is that quality planning was implemented consistently across the project, resulting in very little variation in respondents' assessments. When most participants report similarly high levels of planning, the variable has limited ability to explain differences in project success. In other words, quality planning may have become a standard practice rather than a distinguishing factor influencing project performance.

It is also likely that the benefits of quality planning are realized only when the planned quality requirements are effectively translated into day-to-day execution. A well-prepared quality plan, by itself, does not guarantee successful project delivery if monitoring activities are weak or if quality standards are not consistently enforced during construction. Under such circumstances, Quality Assurance and Quality Control become the mechanisms through which planning is converted into actual project results. This interpretation is consistent with the regression findings, where Quality Assurance and Quality Control remained significant predictors while Quality Planning did not.

Another perspective is that project success in construction is influenced by many interacting factors beyond planning alone, including supervision, inspection, contractor commitment, resource availability, and compliance with quality procedures during implementation. These operational activities may have had a stronger direct influence on project success than the initial planning process.

Overall, the finding does not imply that Quality Planning is unimportant. Instead, it suggests that within the selected housing project, planning served as a necessary foundation, but it was the effective implementation of quality processes through assurance and control that contributed more directly to project success.

5.3. Conclusions

This study aimed to investigate the impact of the project quality management practices on project success in Addis Ababa government housing projects. The results indicate the quality management is still an important element of project performance, with all three dimensions of quality management practices (Quality Planning, Quality Assurance and Quality Control) having mean scores greater than the five-point Likert scale mid-point. Overall, respondents felt that quality related activities were taking place in the projects, but not in exactly the same way in each area. This could suggest that organizations are beginning to understand the significance of quality management in construction projects where delays, rework, and problems with the stakeholders could have a huge impact.

When comparing the single dimensions, project success was found to have a moderate positive correlation with Quality Planning. Completed projects that focused on the setting of quality objectives, standards communicated and quality-related risks identified, tended to report good results. However, when all the quality management variables were included in the regression analysis, the independent effect of Quality Planning on project success was not statistically significant. This discovery seems to indicate that planning may not be enough. A quality plan with a poor implementation will be of little value if it is not put into action during project implementation.

The situation was a bit different when it came to Quality Assurance. It showed the highest relationship with project success among all the predictors, and was the most influential positive factor in the regression model. This outcome can indicate that the continuous monitoring, management support, compliance monitoring and regular process review activities significantly impact project success. In construction practices, issues with quality are generally simpler and more affordable to stop than to fix once finished. These results appear to confirm this, and suggest that preventive quality measures are of special importance to achieving project goals.

Project success also correlated positively with Quality Control and it was statistically significant.

Construction defect reduction and maintenance of required standards through regular inspections, timely corrective actions, testing of materials and project deliverable evaluation seems to be helping projects. Although it was not as significant as Quality Assurance, it was still a significant effect. This could be because it is more practical to catch and fix mistakes early on in the project to ensure that the project is successful and all stakeholders are happy.

Combined, the three aspects of quality management accounted for a significant level of the variance in project success. The regression model explained 74.6 percent of the variance in success of the projects and was statistically significant, indicating that all the quality management practices have a significant contribution to project success. The model also explained a portion of project success, suggesting that other factors may be important in the performance of projects, such as leadership effectiveness, availability of resources, stakeholders' involvement, economic conditions, and project complexity. In general, the results of the study suggest that further development of quality assurance and quality control procedures and processes in the government housing sector with the current good quality planning practices will help enhance the success rate of this sector in Addis Ababa

5.4. Recommendations

Based on the findings of the study, the following recommendations are proposed for project owners, contractors, consultants, and other stakeholders involved in government housing projects in Addis Ababa:

- ✓ Greater emphasis should be placed on Quality Assurance practices, as this variable demonstrated the strongest influence on project success. Regular quality audits, continuous monitoring, and compliance to standards can assist identify of potential issues before they develop into costly construction problems.
- ✓ Project managers need to improve the systems for continuous supervision and performance review during the course of project activities. Routine site inspections and periodic assessment meetings appear likely to improve compliance with project requirements and reduce quality-related deviations.

- ✓ Organizations are encouraged to invest in training and capacity-building programs for engineers, supervisors, and quality personnel. Improved understanding of quality procedures may enhance consistency in project implementation and contribute to better project outcomes.
- ✓ Although Quality Planning did not show a significant independent effect in the regression model, it remains an essential foundation for project activities. Clear quality objectives, documented procedures, and early identification of quality risks should continue to be incorporated during project planning stages.
- ✓ Construction firms should establish stronger Quality Control mechanisms, including systematic testing of materials, inspection of completed work, and rapid implementation of corrective actions whenever defects are identified. Addressing problems at an early stage is often less costly than correcting them after project completion.
- ✓ Management commitment to quality should be visibly demonstrated throughout the project lifecycle. When senior managers actively support quality initiatives, allocate adequate resources, and follow up on quality performance, employees may be more likely to comply with required standards.
- ✓ Project stakeholders should improve coordination and communication regarding quality requirements. Misunderstandings between clients, consultants, contractors, and site personnel can create avoidable quality issues that affect project performance and stakeholder satisfaction.
- ✓ Finally, organizations should view quality management as an integrated process rather than a collection of separate activities. Planning, assurance, and control appear to produce stronger results when they operate together and are consistently applied from project initiation through project completion.

5.5. Suggestion for further studies

- ✓ Future researchers may consider examining additional factors that were not included in this study, such as leadership effectiveness, stakeholder engagement, organizational culture, project complexity, and resource availability. These variables may help explain the remaining variation in project success that was not captured by the current model.

- ✓ A comparative study involving public and private construction projects could provide a broader understanding of how quality management practices influence project success under different organizational and regulatory environments.
- ✓ Since this study depends primarily on questionnaire responses, future research could incorporate interviews, site observations, or case studies to obtain deeper insights into how quality management practices are implemented in real project settings.
- ✓ Researchers may also investigate the mediating or moderating relationships among quality management dimensions.
- ✓ Further studies with a larger sample size and wider geographical coverage could help determine whether the findings observed in government housing building projects in Addis Ababa are consistent across other regions and types of construction projects in Ethiopia.

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Annex

Appendix A: Data Collection Instruments

INSTRUMENT 1: QUESTIONNAIRE

(Target: Professionals that are directly involve in day-to-day process of Akaki Kality 5000 housing project in Addis Ababa)

ADDIS ABABA UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

QUESTIONNAIRE

Dear Respondent,

Greetings, I am a graduate student in the Masters of Art in Project Management Program at the

College of Business and Economics, Addis Ababa University (AAU). I am currently conducting a thesis study titled “Effect of Project Quality Management Practices on Project Success: The Case of Government Housing Projects in Akaki Kality Sub city”

You have been selected as one of the respondents to participate in this study. The survey will take some minutes of your time. The information you provide will be kept confidential and will only be used for academic purposes. Your anonymity is guaranteed. I kindly request you to answer these questions honestly. If you have any questions or concerns about this study, please do not hesitate to contact me at the contact information provided below.

Thank you in advance!

Kidist Abebe Nattea

AAU, School of Commerce

Email: abebekidist778@gmail.com

- **The purpose of this study is to examine how project quality management practices influence project success in government housing projects.**

General Instructions

- As much as possible try to address given questions.
- Where answer options are available, please tick (√) in the appropriate space provided.

The questionnaire consists of two parts:

- **Part 1: Respondents demographic information**
- **Part 2: Questions related to Project Quality Management Practices and project success.**

Part 1: Demographic Information

1. Indicate your Gender *

☐ Female

☐ Male

2. Age *

☐ 20-30 Years

☐ 31-40 Years

☐ 41-50 Years

☐ 50 and above

3. Indicate your educational status *

☐ Diploma

☐ Degree

☐ Masters and above

4. Year of experience *

☐ Less than 5 years

☐ 5 -10 years

☐ 11 – 15 years

☐ Above 15 years

5. Position in the organization *

☐ Project Manager

☐ Site Engineer

☐ Supervisor

☐ Quality officer

☐ Other

Part 2: PROJECT QUALITY MANAGEMENT PRACTICES

- **The Likert scale instruction:**

Please indicate your level of agreement

Scale	Meaning
1	Strongly disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly agree

1. Quality Planning (QP)

No	Statements	1	2	3	4	5
QP1	Quality objectives were clearly defined before project execution					
QP2	Project quality standards were properly communicated to project participants.					
QP3	Quality requirements were incorporated into project planning activities.					
QP4	The project had documented procedures for maintaining quality standards.					
QP5	Adequate resources were allocated for quality management activities.					
QP6	Risks affecting project quality were identified during project planning.					

2. Quality Assurance (QA):

NO	Statements	1	2	3	4	5
QA1	Regular supervision was conducted to ensure compliance with quality standards					
QA2	Project activities were periodically reviewed to improve work processes					
QA3	Employees received adequate guidance regarding quality requirements					
QA4	Management actively supported quality improvement practices during project execution					

QA5	Quality assurance procedures helped prevent defects before they occurred.					
QA6	Continuous monitoring was conducted to maintain the required project quality level.					

3. Quality Control (QC):

NO	Statements	1	2	3	4	5
QC1	Construction works were regularly inspected to verify compliance with specifications.					
QC2	Defective works were identified and corrected quickly.					
QC3	Materials used in the project were tested against required quality standards.					
QC4	Quality control measures reduced the occurrence of construction errors.					
QC5	Project deliverables were evaluated against established quality criteria.					
QC6	Corrective actions were implemented when quality problems were identified.					

4. Project Success (PS):

NO	Statements	1	2	3	4	5
PS1	The project was completed within the planned budget and schedule					
PS2	Projects consistently meet or exceed key performance indicators					
PS3	The completed project met the required quality standards					
PS4	Clients were satisfied with the overall project outcomes					
PS4	Key stakeholders were satisfied with project performance					
PS5	The project achieved its intended objectives successfully					

Thank you for your participation!