ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

PROJECT QUALITY MANAGEMENT PRACTICES AND IT'S EFFECT ON PROJECT SUCCESS: THE CASE OF KOLFE AGRICULTURAL MARKET CENTER

BY

YARED BEYENE BEO – SGS/0119/2014B

ADVISOR

DESTA MULUGETA (PHD)

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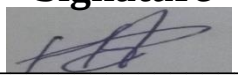
APPROVED BY BOARD OF EXAMINERS

Dean, Graduate Studies	**Signature**
_____	_____
Advisor	**Signature**
Desta Mulugeta (PHD)	
External Examiner	**Signature**
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Internal Examiner	**Signature**
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ACRONYMS AND ABBREVIATIONS

EQA	Ethiopia Quality Award
ISO	International Organization for Standardization
I.e.	Id Est and means “in other words.” “That is”
PM	Project Management
PMI	Project Management Institute
PQ	Project Quality
PQM	Project Quality Management
QMS	Quality Management System
SPSS	Statistical Package for the Social Sciences
PS	Project Success
QA	Quality Assurance
QP	Quality Planning
QC	Quality Control
QI	Quality Improvement
MIPs	Mega Infrastructure Projects

ABSTRACT

Any product or company must prioritize quality, and applying the best quality management techniques is crucial to implementing quality in any kind of good or service. The research aimed to evaluate project quality management practices and their impact on project success at Kolfe Agricultural Market Center. Using a mixed technique, it examined the implementation of variables such as quality planning, assurance, control, and improvement. The study found that project quality management had a positive impact on project performance, including budget (3.77), stakeholder satisfaction (3.94), scope (3.81), and schedule (3.94). This indicates that quality management has the least effect on project budget, indicating a less significant impact on project success. In the case of implementing quality planning, quality assurance, quality control and quality improvement, the result showed, with quality assurance effect on project schedule (3.57) which is medium but to have the least effect on project success, Quality control was implemented (4.11) which shows the other a highest implementation and effect on PS. The analysis for project quality management practices revealed the following mean results for quality plans are prepared before starting job (4.17), quality plan is communicated to all project team (4.15), quality assurance activities are implemented regularly (4.17), quality control activities are implemented regularly (4.09), quality improvement activities are implemented regularly (4.11), system for quality control (4.04), system for quality improvement (4.02), for quality planning procedures (4.09), quality improvement procedures (4.04), are all the means with high perceptions from employees to indicate high level of implementation and, quality policies are agreed upon by decision makers (3.98), the quality improvement coordinating body mean (4.00), quality improvement tools and techniques (3.91), company practices and continuous improvement(3.96), for system for quality planning (3.83), employees are well equipped and required human resource are (4.00) and (3.87) respectively show there is a low and average level of implementation and perception from the employees. The study revealed a weak quality management framework, with people controlling the system. It suggested establishing accountability in all sectors to regulate decision-making, as lower-quality production could result. Additionally, weak communication from top management affected employee coordination, suggesting more effective communication metrics could benefit project managers and success.

Key words: - Quality, Project quality management, Project success, Quality assurance, Quality management practices, Quality management challenges

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

One of the oldest and most prestigious achievements of humankind is project management. The accomplishments of those who constructed the pyramids, the ancient city architects, the masons and craftsmen of the Great Wall of China, and other global wonders serve as a testament to this (Peter, 2001).

One of the earliest approaches to project quality management occurred in ancient Babylon. During Hammurabi's rule, if a building collapsed, the architect and builder were both put to death. Fortunately, in modern times we focus more on preventing problems than claiming retribution if problems occur, (Peter,2001).

According to PMI (2008), a project is a short-term endeavor with a start and conclusion that is carried out by individuals to achieve predetermined objectives within predetermined boundaries of budget, time, and scope. Quality management, or QM, is not an independent, stand-alone procedure used to assess the output's degree of quality at the conclusion of an activity.

Because of the rapid economic progress, the demand for infrastructure and facilities has increased globally, making the construction industry crucial. Japan adopted the concept of quality management in the late 1930s, following World War II. And following that, a few companies in the manufacturing division concentrated on raising quality and making use of machinery, (Peter,2001).

Africa and other developing economies are heavily impacted. According to research, using project management techniques gives businesses the tools they need to be competitive, efficient, and adaptable in a complex, changing environment PMI (2009). After identifying a wide range of factors that contribute to project failure, including issues with planning, implementation, monitoring, and control.

The fundamental living circumstances required for the sustainability and advancement of human life on Earth are also supplied by the building sector. Building projects are in high demand and operations are thriving in many nations as a result of the world's growing population, increased

land pressure, and expanding economic activity. Ethiopia is one of those nations, having lately started a number of significant projects all around the nation. In order to satisfy the constantly growing client demand, many of these projects are completed with thorough inspection and high standards.(Worku, 2019)

The general quality management practices in Ethiopia were found to be low in all the tenets, including leadership, policy and strategy, resource management, customer satisfaction, business performance, and impact on society, according to (Birhanu & Daniel, 2014)Of these factors, policy and strategy is the most critical problem area despite the least weight given by the Ethiopian Quality Award (EQA).

The process of making sure that every project activity required to plan, organize, and carry out a project is successful and efficient in terms of the goal and how well it performs is known as quality management. The process of measuring quality, adjusting processes, and repeating the cycle again and again until the target quality is reached is known as quality management. One of the key elements in the success of building projects is quality. Both project success and quality in the construction industry can be defined as meeting the expectations of project stakeholders.

Projects are the beginning and end of a continuous process called quality management. Instead, of assessing and correcting subpar results, the emphasis is primarily on prevention and avoidance. Projects are considered the means of implementing organizational growth because they account for around half of all work completed.

The majority of construction projects are started with predetermined budgets, timelines, and standards for quality. Construction projects are typically judged successful when they are completed on schedule, within budget, in accordance with technical specifications, and to the satisfaction of the client. Comparing Ethiopia's construction sector to the rest of the world, it is not at the necessary level in terms of cost, completion time, and project quality. The use of subpar formwork systems is one of the many elements that contribute to the nation's bad construction industry practices (Amare, 2015, cited in Mary, 2021).

For this reason, it's critical to examine the quality management procedures of the designated company in the designated project.

Project success is influenced by a number of other elements as well as project management methods, and not all project management tools and approaches are directly linked to project success, according to (Bilal Hussain. 2022).

Project managers and contractors working in different industries throughout the nation are taking various actions to undertake various types of procedures that will increase the dependability of project quality. An effective project management methodology must be used from the beginning to the end in order to carry out these projects successfully and achieve their functional goals within the allotted service period.(Birhanu Shiferaw, n.d.)

When large-scale construction projects are being undertaken by contractors, it is crucial to pay particular attention to quality because it is important to understand that building defects could result in numerous issues for both the government and city residents if they are not addressed, including financial loss and physical harm. In order to improve the project quality management activities and raise the overall project performance, this study examines the challenges and practices of project quality management and their impact on project success. It does this by evaluating the various perspectives from which project management practices implementers operate, identifying areas of implementation weakness and outlining opportunities for improvement.(Worku, 2019).

A study by (Gazal, 2023) shows client happiness and project quality management practices are positively correlated. This suggests that customer happiness with construction companies increases along with the firm's project quality management practices. The model also illustrates how much client satisfaction variance is explained by project quality management practices. The difference in customer satisfaction that successful project quality management was able to account for was also disclosed by the coefficient of determination.

Quality management is a crucial component to take into account in building and construction projects. A project's quality, economic effectiveness, reduced waste, and avoidance of rework are all enhanced by efficient quality management. Project teams need to be aware of and supportive of other pertinent project participants' involvement in the quality management component(Gazal, 2023).

Project management is both an art and a science because it involves both people management skills and technical tool knowledge. It also involves managing relatively short-term efforts with finite beginning and ending points, budgetary constraints, and customer-specified performance criteria. All management tasks that guarantee the quality policy, objectives, and responsibilities and carry them out through planning, quality assurance, and quality control are included in project quality management.

The degree to which the organization is able to refrain from acting or take steps to lessen the consequences of both internal and external influences determines the success of a project.

This research also wants to investigate the relationship between quality management and other variables with project success.

As the final arbiter of quality, beneficiaries' needs and expectations serve as a barometer for the success of project deliverables. Beneficiaries occasionally utilize subjective standards to define quality. Nonetheless, quality is objective in other respects as well. One or more measurements, which may be gathered to reflect its particular aims, are to be used to determine the quality attributes. One of the main tenets of quality management is the decrease of faults in product characteristics. This could be ascertained by accounting for mistakes and flaws found after utilizing the product. A sufficient quality management approach produces high-quality goods and services; it is not merely an isolated incident. Quality is the process of monitoring and adjusting procedures until a desired level of quality is achieved.

Ethiopia's capital and one of its most populated cities is Addis Ababa. In light of the plans being developed by the city administration to reduce the vulnerability of its residents to rising living expenses and to meet megacity standards for the supply of necessities related to common agricultural products, the city is constructing four large warehouses on the outskirts of the city that will also serve as retail, wholesale, and other related services. One of these projects located in Kolfe Sub city was be the subject of this study.

1.2. Statement of the problem

Although project quality management is typically incorporated into other fundamental project management disciplines like project integration, project scope, project time, project cost, project human resources, project communications, project risk, project procurement, and project

stakeholder management, a project may still be finished on time and within budget but not be deemed successful due to its quality. (Christine,2010:191, cited in Worku, 2019) “if the quality does not meet the customer’s expectations, nothing else matters.”

The framework for the efficient deployment of relevant tools, techniques, and procedures that result in a construction project's operational success must be provided by quality management. For a construction company, quality control is an integral part of every managerial and operational procedure related to the project. It is not a stand-alone function. In the construction sector, quality assurance, quality control, and quality planning are referred to as the quality management system (QMS).(Mane & Patil, 2015)

Keeping in mind that the construction sector is vital to the nation's socioeconomic development process, its significance affects all economic activities both directly and indirectly, and its ability to increase the nation's output encourages the expansion of other sectors. Nonetheless, a number of issues and challenges limit the construction industry's performance. These include low-quality raw materials used in construction, which reduces output, widespread corruption, excessive cost and schedule overruns, a lack of industry rules and regulations that are updated on a regular basis, a lack of construction industry policies, and a lack of efficient laws and regulatory frameworks that aid in ensuring compliance with various construction-related factors. (EEA,2008, cited in Worku, 2019)

Abraham (2004, cited by Miressa 2017), improved understanding of the poor performance of public construction projects in Ethiopia. According to the analysis, public construction projects performed poorly in terms of completion rates. As a result, poor performance for both case studies were caused by completion time, cost overruns, and issues significantly tied to quality (Abraham, 2004).

According to Mary.2001, quality management is a principle that ensures quality in a company's products and services. There are various types of quality management programs which include but are not limited to Six Sigma, Theory of Constraints and Quality Management. Although the approach to solving quality issues vary with the different quality management programs, the goal remains the same--to create a high quality, high performing product or service that meets and exceeds the customers' expectations. Quality management is important to companies for a variety of reasons. Quality management systems force company departments to work as a team. A

quality system incorporates measures that affect sales, finance, operations, customer service and marketing.

According to Gazal ,2023) One of the main issues that leads to substantial quality problems in project construction is the project team members' lack of participation in quality decision making. These researchers' findings provide a better explanation for why there are so many variables influencing project quality.

According to Mary. 2021 “a study conducted using two case studies from public construction to better understand Ethiopia's low performance of public building projects endeavors. The study unequivocally shows that the outcomes of public construction projects in the case studies both showed low rates of achievement. As a result, finishing time had poor results for the two Case Studies. However, although Case Study I showed low Case Study II revealed that poor performances were highly associated with cost overruns. connected to problems relating to quality. Consequently, the short-term goals have also suffered in the way they executed”.

According to a different survey conducted in 2016, there are frequent complaints regarding structural flaws in the majority of the government-built structures in Addis Ababa. One of the reasons this situation exists is because of subpar construction work. This will have an adverse effect on residents' quality of life and reflect poorly on the parties involved in the development of condominium (Dires, 2016).

Although construction is a complex process that involves numerous companies working on a single project, the roles of the contractor, consultant, and client are essential to the project's success.(Mane & Patil, 2015)

Even though there are annual trainings given to employees there are no data or prior studies that demonstrate the practice, difficulties, or efficacy of project management in the mega construction office in Addis Abeba. Several indications from ongoing projects and document reviews raise concerns about the efficacy of project management techniques and the construction of the megaprojects in Addis Ababa. Some of the projects have had significant delays in terms of quality and expense, and some have failed to meet their objectives.

This issue is thought to be one of several consequences of successful project management and monitoring evaluation. Additionally, the Addis Ababa Mega Projects Construction Office has not assessed how quality management techniques affect project success on this particular project.

My research differs from earlier ones in utilizing a completely different racial population sample, and the institution is also different. Many institutions in Ethiopia don't have a reliable information to critique their project's quality which in turn may cause repetitive mistakes in delivery subsequently making the client unsatisfied.

The thesis seeks to answer why most constructions don't meet the required quality standards and what types of practices are taken under the management to fulfil the required benchmark of success and if the issue at hand is not solved there might be a continuation of the same problem for the foreseeable future.

1.3. Objectives of the study

1.3.1. General objective

To examine the project quality management practices and its effect on project success at the kolfe agricultural products market center.

1.3.2. Specific objectives

This study is specifically aimed:

1. To describe project quality management practices of Addis Ababa mega projects construction office.
2. To examine project success of the kolfe agriculture market center.
3. To explain effects of project quality management practice on project success of kolfe agriculture market center.

1.5. Research questions

The study was guided by the following key research questions:

- What does the practices of project quality management Addis Ababa mega projects construction office look like?

- What does the current level of project success in Addis Ababa mega projects construction office?

- To what extent does practices of quality management affect project success at Addis Ababa mega projects construction office?

1.6. Scope of the study

Thematic scope

Project performance may generally be enhanced through the application of quality processes. The study intends to identify the best practices and challenges of project quality management in order for top managers, technical managers, and project managers to master the discipline and have greater success in managing future megaprojects. In reality, however, projects have failed to meet customer expectations within budget and time constraints.

Geographic scope

This analysis did not include any other projects the Addis Ababa City Administration is working on or projects that were being carried out by other city administrations. only sources with a stake in the case study location which is located at kolfe keranyo woreda 07 was consulted for information on project quality management.

Methodological scope

The organization's employees who operate in administrative capacities or in departments unrelated to the retail and warehouse project for Kolfe agricultural products were not be included in the study.

The primary focus of this study was on the individuals in charge of the overall project quality management procedures of the Kolfe Agricultural Products Retail and Storage Facility, with a general focus on the Addis Ababa Mega Project Construction Office.

1.7. Limitation of the study

The main objective of this thesis is to concentrate on the retail and warehousing project specifically designed for Kolfe agricultural products market center. The scope of this study was confined to the domain of quality management, with a particular focus on the procedures and challenges associated with quality management in these projects. It is important to note that project management is a vast and extensive research field that encompasses various aspects and dimensions. However, for the purpose of this thesis, we will delve into the intricacies of quality management in relation to the aforementioned project. By providing detailed explanations and insights, this thesis aims to clarify the various effects of quality management on project success.

With a limited amount of time and a researcher who lacks extensive experience, the research study inevitably had certain limitations in adequately addressing the various issues that impact the success of a project, particularly within the defined scope.

The foremost factor that determines the excellence of products or services is the level of customer satisfaction. However, it is important to note that this particular study mainly focused on assessing quality management practices from the standpoint of those implementing them, which inadvertently obscured the customer's viewpoint on quality. By primarily considering the implementer's perspective, the evaluation may not fully capture all the necessary details.

1.8. Significance of the study

The construction office for the major projects in Addis Abeba may find this study helpful as it raises awareness of the department's quality standards and processes and how they affect project success among other things. The city administration would also benefit from knowing the various quality management techniques and how they relate to project success.

The suggestion can serve as a springboard for more research to close the knowledge gap or go deeper into novel concepts and methods related to quality management and project success. The research's conclusions, whether they show that the company in question is currently operating in an exceptional or subpar manner, will help local contractors learn how to further develop their procedures and maintain their competitiveness. This research is expected to:

1. Assist in raising the standard of projects

2. Support the development of improved QMP

3. evaluates the connection between project success and quality management

Since I’m in the field of project management, the research would be beneficial to me since it will provide me more practical knowledge and give me an understanding of what it's like to be an employee at the corporate level of a large organization like the Addis Ababa Mega Construction Office.

My study will be useful to other researchers in this field to advance their understanding. It will also serve as a little contribution from me to the field of management and help me finish my master’s degree at s.t Mary’s university.

1.9. Organization of the Thesis

This research consists of mainly five chapters

Chapter one shows background of the study, statement of the problem, objectives of research, research questions, justification, significance and scope of the research. Chapter two Literature review shows a detail review from concepts and definitions to identify the main project quality management practices and their effect on project success. It constitutes of theoretical frame work and conceptual frame work that helped us achieve by guiding the data collection methods. Chapter three Research methodology shows the methodology used in this research in order to achieve the required objectives and to answer the research questions. Chapter four Result analysis and discussions: this chapter shows result, description and discussion of research results. Chapter five will give Conclusions and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

INTRODUCTION

The review literature of many academics and writers in the field of quality management is included in this part. It covers the theoretical and practical discoveries of numerous scholars on the subjects of project success, quality assurance, and management.

There will be two frameworks in this part.

Theoretical literature review, where in this section, several literary works will define quality, with a focus on the construction industry. Therefore, quality assurance and control are a component of project quality management. In this section, we will quickly explore the definitions and elements of quality management. Planning, ensuring, controlling, and improving quality are those parts of quality. In addition, the body of existing literature pertaining to quality assurance and control in the construction industry as well as the meaning and relation of project success will be examined and Review of empirical literature, where the literature offers empirical proof of quality control in building projects. Furthermore, the conceptual framework of this study is offered at the conclusion of this section.

2.1. Concepts and Definitions

Quality management is a critical component of any given business because high-quality products help to sustain product quality and loyalty and lower the risk and expense of reworks. Quality is all about meeting the needs of the customer, which makes it essential to any organization's existence in order to gain the loyalty of the customers.

It is known that, in theory, quality may be achieved through continuous improvement provided that careful implementation of quality plans is made to meet required standards and expectations for quality. Given that customer happiness and the longevity of the construction project are directly related to quality in the industry, the quality metrics used will determine the expected level of output. In addition to the primary procedures listed by PMI (2013) quality planning,

quality assurance, and quality control quality can be attained over time by progressively eliminating defects. Employee participation in quality activities can also be improved through training, provided that the plan and actions to be carried out are properly communicated.

2.1.1. Concepts of Project

Defining a project is the first step towards understanding project management. A project is a brief endeavor with a specific goal in mind. This could be an outcome, a service, or a product. PMBOK (2021). A project is characterized as a sequence of scheduled activities and tasks that are typically completed in a consecutive manner.

Projects can be included in portfolios or programs, or they can stand alone PMBOK (2021, p. 4). A project is a collection of work completed within a defined time frame with the aim of achieving particular goals.

Due to those characteristics, the project is likely to be a one-time program, have a budget, a life cycle with start and end data, and require the use of numerous resources, the majority of which may be limited and need to be shared with other projects.

Achieving a continuous flow of project objectives within budget and schedule, at the intended performance/technology level, with efficient use of the resources allotted and results that are approved by stakeholders and/or the client is the definition of successful project management. The tasks that are included in the process groups can vary from project to project as every project is unique and every customer may have distinct requirements. (Kerzner, 2017, Pages 2-3).

2.1.2. Project Success and Success Criteria

Making ensuring the project will meet or beyond the demands and expectations of stakeholders is the fundamental tenet of project quality management. The fusion of quality management with project management is known as project quality management.

Crawford claims that the main goals of quality management are to guarantee product suitability for use, customer satisfaction, requirement compliance, and fitness for purpose. The project model views quality management as a collection of tasks or activities necessary to guarantee that the project meets all of the objectives for which it was undertaken based on documentation in the state of work. It also emphasizes quality management from the viewpoints of the people,

processes, and products necessary to make quality an efficient and successful component of project completion (Crawford 2002).

Furthermore, according to the PMBOK Guide, "Project Quality Management comprises the procedures and actions of the executing organization that establish quality standards, goals, and duties to ensure the project will fulfill the needs for which it was started. Through policies and procedures, it puts the quality management system into practice, conducting ongoing process improvement activities as needed PMBOK (2008).

2.1.3. Concepts of Project Quality

The formal definition of quality according to the International Organization for Standardization (ISO DIS 9000.2000) is the extent to which a set of innate qualities satisfies the criterion.

QM (quality management) is a data-driven business management methodology that seeks to achieve process excellence and improve product quality by reducing waste and optimizing the value of every stage of the product or service lifecycle. The ultimate purpose of implementing project quality management practices is to achieve consistency in project success and satisfaction of the client. Quality is the ability of a product (a good or a service) to consistently meet or exceed customer expectations PMI (2008).

Juran defines quality as a product's ability to satisfy customers and as well as all of the actions a company takes (from a management perspective) to guarantee that the product satisfies customers' needs (Juran J.M,1974)

From the time a project starts until the very end of the project closure phase, it is a component of all project management processes PM4DEV (2016).

Rose (2005:3) highlights two common sayings about quality: "Suppliers promise that their goods and services embody it," and "Customers know it when they see it." In both cases, there is a lack of clarity about what quality is, which makes it difficult for the implementer to determine what is expected to be delivered. There are various ways to define quality. From the perspective of the product, its features can be deemed as its quality. From the perspective of defects, a product is deemed to be of high quality if it is free of defects. Another way to define quality is from the perspective of the customer.

Barnes (1987) argues that performance management in installation, construction, or engineering structures should be approached in a manner akin to that of controlling time and cost. Following schedule compliance, quality compliance has been ranked second among the five commonly used project performance criteria K.N. Jha & C.T (2009). The other four criteria are: no dispute, safety, quality, budget, and schedule compliance.

According to this definition, quality is determined by the needs, requirements, and expectations of the customer. In general, quality is defined as a system that sees the big picture and all the parts that work together, so defects, products, and customer views can all be used to describe quality.

Construction quality, on the other hand, is more elusive to define. First of all, the product is a work of art with distinct characters rather than a mechanical component. An illustration would be a building, which is composed of several parts. Every one of these elements has a distinct personality and quality that is evaluated in relation to the methods and resources employed to attain it. In addition, how skillfully the structure is designed, as well as the necessary comprehensive specifications and final products, will determine the construction cost and schedule.(Mary, 2021)

2.1.4. Project Quality Management Process

Three components make up project quality management processes, according to PMI (2013): quality assurance, quality control, and quality planning. The "process of identifying quality requirements and/or standards for the project and product and documenting how to demonstrate the product compliance" in line with the pre-defined quality standards is known as quality planning, according to PMI (2013:227). The scope baseline data, stakeholder registration, cost performance baseline, schedule baseline, risk register, enterprise environmental factors, and other organization asset data can all be used as inputs to construct quality planning. Further, quality assurance involves auditing quality requirements and results to guarantee that the quality standards and operations are correctly applied. In quality control, monitoring and recording of results are carried out to assess the performance over the planned standards and recommend necessary changes to improve the quality PMI (2013). In addition, the main requirements and standards were identified in the planning process, and the method to confirm the project quality compliance was documented.

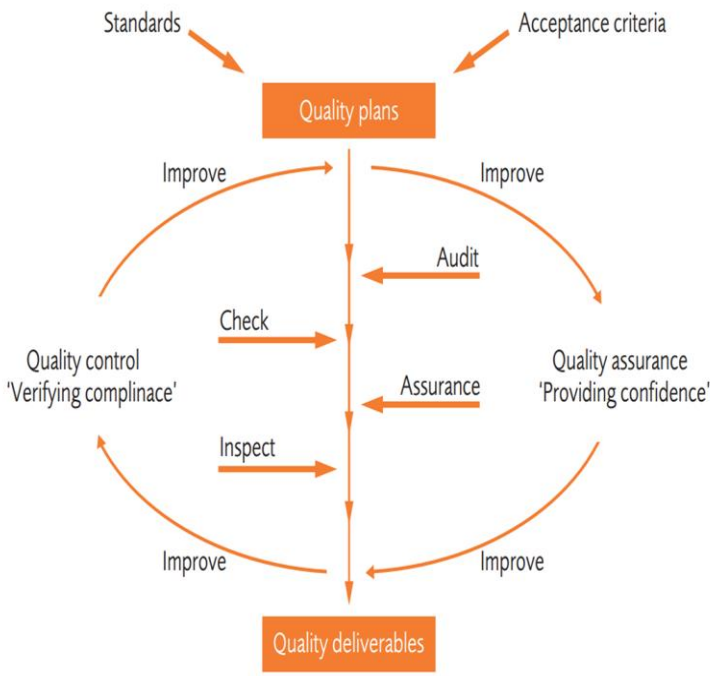


Figure 2.1 Elements of quality management, adopted from starting out in PM, 3rd edition (2018)

2.1.5. Indicators of Project Quality

Rose (2014) created the "wheel of quality," a single graphic picture that encapsulates the fundamental ideas of modern quality. The diagram below illustrates the connections and exchanges between the three components of customer focus, variance, and improvement.

Figure 2.2 The wheel of quality, adopted from Rose (2014, p.24)

2.1.5.1. Customer focus

It is vital to recognize that multiple customers may be involved in a project. Rose (2014) makes a distinction between hidden, internal, and external customers. The obvious clients are the external ones; they are the ones who cover the costs and receive the finished product of the project. Rose (2014) does, however, also take suppliers into account as external clients. In the sense that they are an external customer, the supplier needs to have specific instructions from the project team in order to provide supporting products and services. The collaborators who are part of the project organization are known as internal customers. Internally, the various cooperating elements view one another as suppliers and customers. Customers who remain anonymous make up the third category. According to Rose (2014), hidden customers are organizations or stakeholders who are not directly involved in the project but who nevertheless have an interest in it or are concerned about it.

2.1.5.2. variation

According to Rose (2014), variation needs to be recognized and managed in order to affect a project's outcomes. This is true since variations may result in flaws. An essential first step in improving quality is figuring out which aspects of the project are susceptible to variance. According to Rose (2014), project managers need to make an effort to comprehend variations, the reasons behind them, and the consequences they have. The variance must then be managed in order for the related process to operate consistently and yield predictable outcomes. When project managers or team members evaluate the procedure and take steps to somewhat lessen variation, improvement happens.

2.1.5.3. Continuous improvement

The concept of continuous improvement is debatable since many projects are just attempting to fulfill the project's requirements. Rose (2014, p. 28) asserts that while fulfilling project requirements may result in a happy client, exceeding customer expectations is necessary to guarantee the next contract. This is accomplished by facilitating ongoing enhancements to an organization's project management procedures. This calls for efficient communication both inside and outside the project, the ability to recognize issues and take appropriate action, as well as the ability to recognize opportunities and seize them.

Although the aforementioned three components form the foundation of the quality wheel, there are additional significant factors that contribute to project quality. According to Rose (2014), training is the foundation of quality. This means that training in the necessary abilities is required for the project's members to successfully complete it. The trait that ties all the other components together is leadership. Then, requirements, procedures, and controls are used to express each component.

2.1.5.4. Quality planning

"PMBOK" describes quality planning as the procedure for "figuring out which quality standards apply to a project and how to meet those standards": Put differently, it refers to strategizing how to meet deliverable quality standards for both the process and the product: "Quality is the degree to which a set of inherent characteristics fulfill requirements". When planning for quality, one must adhere to certain principles, which are as follows:

Prioritizing customer satisfaction: The needs of the consumer determine quality.

Prevention over inspection: Preventing errors is preferable to inspecting the outcome and fixing flaws.

Management accountability: Management must approve quality-related costs.

Constant improvement: Improving oneself is a methodical, iterative process.

2.1.5.5. Quality assurance

Monitoring and evaluating different project aspects on an ongoing basis is how quality assurance is carried out. Its goal is to guarantee that the job is produced at a minimum acceptable quality level. Quality assurance is a component of quality management that focuses on giving assurance that quality requirements are met, according to ISO 9001:2000.

Even with the abundance of site experience accumulated over the years, one in ten building contracts still result in complaints from clients about the builders' lack of satisfaction. Forty percent of building faults happen during the construction phase, according to research conducted by the British Researches Establishment in the United Kingdom BRE (1982).

These flaws are typically caused by:

Poor craftsmanship;

Misreading drawings and specifications;

Implicit requirements;

Inadequate communication among the current stakeholders

Absence of supervision; &

Inadequate planning.

2.1.5.6. Quality control

Quality control is the technical facet of quality management according to the PMBOK. Members of the project team with specialized technical knowledge of the many project components actively participate in quality control. They set up the technical protocols and processes necessary to guarantee that the project produces high-quality results at every stage, from planning and development to execution and upkeep. To guarantee that quality is attained, each step's output must adhere to the overall quality standards and quality plans PMI (2008).

Ad hoc quality control means addressing any issues that come up while the project is underway. These could include unanticipated obstacles, timetable delays, and financial difficulties. Although it is not required, quality control is frequently carried out by a Quality Control Department or other organizational entity with a similar name. To assess quality control outputs, the project management team should be familiar with statistical quality control, particularly sampling and probability. Among other things, they ought to understand the distinctions between:

Inspection (keeping errors out of the hands of the client) and prevention (keeping errors out of the process).

Variables sampling (where the outcome is graded on a continuous scale representing the degree of conformance) and attribute sampling (where the result either complies or does not).

Random causes (variations in regular processes) and special causes (atypical happenings).

Control limits (the process is in control if the result falls within the control limits) and tolerances (the outcome is acceptable if it falls within the tolerance's stated range).

2.1.6. Project Quality and Quality management in construction Industry

According to (Mary, 2021) for construction organizations, Quality Management Systems offer solutions to a number of long-standing problems. It may also present a favorable chance for modernization and restructuring, as well as for modifications to long-standing practices that have been accepted without careful consideration. In the building housing sector, the QMP primarily relates to quality assurance, quality control, and quality planning. The concepts of quality planning (identifying quality standards), quality assurance (evaluating overall project performance), and quality control (monitoring of specific project results) in the quality management processes were defined by PMI (2000) for the purpose of implementing quality management in construction housing projects.

Every department inside the business will be impacted by a well-executed QMP. (Fixsen, 2001) defines implementation as a predetermined series of actions intended to carry out a program or activity with known parameters. This definition states that implementation procedures are intentional and sufficiently detailed to enable independent observers to identify the existence and intensity of the "specific set of activities" associated with implementation. Furthermore, the program or activity in question is sufficiently detailed in its description for impartial observers to be able to identify its existence and intensity.

The fundamentals of quality control Systems pertaining to quality comprise the Construction Company's setting of goals and policies for resource management, the staff's assignment of duties, positions, and authority, and the creation of the organizational structure inside the company.(Mary, 2021)

This study's empirical evaluation takes into account research done in Malaysia on "Quality Management in Construction Projects." (Haron, 2018), Within the framework of the Malaysian construction sector, this Malaysian researcher investigates preliminary quality management techniques, management commitment in quality management, and quality management implementation issues in building projects.

The study's conclusions show that there are issues with quality management implementation that need to be addressed and that quality management in Malaysian building projects has to be

reinforced. The issues that the scholars have found are quite similar, notwithstanding certain differences brought on by the projects' real-world settings. As a result, these factors are also taken into account in my research to take into account the context of house development projects.

2.1.6.1. Quality assurance in construction

Building quality assurance (QA) is a component of the quality management system. In order to meet quality requirements, QA entails creating project-related rules, processes, standards, training, guidelines, and systemic activities that are applied in a quality system Basu (2004); Freeman-Bell & Balkwill (1996); Aziz & Abdel-Hakam, (2016); Panuwatwanich & Nguyen, (2017). Project success is correlated with having defined processes, explicit policies, standards, training, guidelines, and systems that maximize employee performance in supporting a business's strategic objectives. These elements focus attention, inspire motivation, and maintain an effective quality management system Arditi & Gunaydin (1997); Nyakala (2017). These policies, procedures, and testing-continuously backed systems both in the lab and on location. In actuality, field engineers examine building supplies and oversee the building procedure. The pre-qualification procedure for materials (such as a certified material product list or commercial grade product) as well as sampling and testing at the source, the factory, or the jobsite are specifically referred to as materials' testing.

Various researchers hold the belief that the efforts of the individuals within the company will be indiscernible unless the contractors in the construction industry actively participate in enhancing productivity through a well-organized quality management system (Arditi & Gunaydin, 1997; Basu, 2004; Bierman). Project consultants and managers in Ethiopia are in charge of making sure that infrastructure projects are completed on schedule, within budget, and with the required level of quality and supervision. Any built-environment project must be able to calculate the cost of subpar quality and how it affects profitability and productivity in order to become more competitive in the construction sector Ahmed (2015). As a result, contractors should see quality assurance as a means of enhancing their ability to compete in the market rather than as an expensive procedure, costly product, or time-consuming process (Mofokeng & Thwala, 2012: 713; Kruger, Ramphal & Maritz, 2014).

2.1.6.2. Quality control in construction

Initiative In the construction industry, quality control refers to the process of confirming that the project is constructed according to the plan, that engineering practices and industry standards allow for tolerances to be met, and that the final product satisfies project quality standards as assessed by the relevant stakeholders. Selecting what to control, setting standards that serve as the foundation for decisions about potential corrective action, establishing 14 measurement methods, comparing actual results to quality standards, acting to bring nonconforming processes and material back to the standard 22 based on the information gathered, monitoring and standardizing measuring devices, and including thorough documentation for all processes are all important components of a good quality control system (Chang, 1999, cited in Mary, 2021).

There are various high-quality planning instruments and methods.

Analysis of costs and benefits the cost-benefit ratio and the cost-benefit analysis are comparable.

To examine the trade-offs associated with delivering quality, the costs and benefits are calculated.

Cost of quality: The term "cost of quality" (COQ) refers to all expenses incurred in order to ensure that the project meets the necessary quality standards. This involves determining the appropriate balance and paying for both requirement compliance and non-conformance. The current idea of quality management places more emphasis on error prevention than error detection because nonconformance comes at a significant cost.

The following things are connected to quality:

The expenses of prevention come from preventing defective products from reaching the consumer. Data analysis, reliability engineering, quality planning, and training are a few examples.

Appraisal charges include inspection, testing, calibration, studies, and surveys that are done to ensure that the product is in compliance.

There are two ways to classify failure costs:

Internal: Nonconformance discovered during the product's tenure in the operating organization is referred to as internal failure costs, and it encompasses scrap or rework.

External Failure Costs: These expenses cover returns or repairs for nonconformance discovered after the product has been delivered to the client.

Direct and indirect costs can be attributed to nonconformance.

Direct: expenses related to a direct failure can comprise scrap, warranty costs, rework, modifications in engineering, liability insurance, or inventory acquisition.

Indirect costs encompass a range of expenses such as reduced project efficiency, lost clients, higher acquisition costs, and lowered team morale.

Extra planning instruments: -

Brainstorming is a method of information gathering in which a number of unfiltered inputs and ideas are gathered and stored for further examination and deliberation.

Force field analysis (FFA) is a method of analysis that involves classifying traits or elements that support (pros) and oppose (cons) a notion.

The Nominal Group Technique (NGT) is a brainstorming technique that incorporates a ranking system for ideas. It is predicated on the idea that a nominal group—that is, a group that has decided to collaborate—will yield superior outcomes to a group that is participating in conventional brainstorming. NGT solicits anonymous feedback from the group and promotes debate of all submissions. The input elements are then ranked by each participant. The products are further ranked according to the total score they have received.

2.1.7. Project Success and Project Quality Management

2.2. Theories of Project Success

Clearly, defining what constitutes a successful endeavor is essential. That is, after all, how your evaluation as a project manager will be made. The secret to project quality is to translate tried-and-true quality approaches to a broader project management area in a more relevant and efficient manner. Rose, Kenneth H. (2005) "...include all the activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project

will satisfy the needs for which it was undertaken," according to the PMBOK Guide, describes quality management processes.

Project success is "measured against the overall objectives of the project," according to De Wit (1988) and other authors, whereas project management success is "measured against the widespread and traditional measures of performance against cost, time, and quality."(Prakash Prabhakar, 2008)

According to (Bilal Hussain, 2022) large capital investments, a variety of disciplines, widely distributed project participants, stricter deadlines, demanding quality standards, rising costs, environmental shocks, growing stakeholder power, and ICT advancements have made projects today far more complex than they have ever been. One way to assess a project's success is to look at how well the final good or service complies with organizational governance. Understanding corporate/organizational governance policies and procedures that are relevant to the topic of the product or service is crucial for the project manager. The project manager needs to possess the necessary project management knowledge in order to guarantee the project's success.

Project managers have traditionally considered their work to be effective when it is finished within the parameters of the triple constraint (Shenhar & Dvir, 2007). Some scholarly works, however, contend that the triple constraint is far too limited to adequately capture the range of limitations that a project may encounter (Frefer, 22 Mahmoud, Haleema, & Almamlook, 2018, Kerzner 2017, Shenhar & Dvir 2007).

There are several competing restrictions on projects, and these constraints might be primary or secondary, according to Kerzner (2017, p. 7). Risk, customer interactions, image, and reputation are secondary issues. These limitations could cause a departure from the initial success criteria of performance, cost, and time and could have a significant impact on the triple constraint (Kerzner, 2017, p.7).

The research indicates that in order to successfully complete a project, certain trade-offs in certain of the project constraints are typically necessary. "When managing a project with the three limitations of time, money, and scope in mind, we have to juggle a lot and frequently figure out a solution to satisfy each one, which usually has an equal weight. It could become difficult, if

not impossible, to meet every restriction when there are five or six requirements, at which point it might be required to prioritize the constraints. (Kerzner, 2017, P. 7)

Given that the literature describes the triple constraint as an ineffective way to gauge the effectiveness of a project. What constitutes a successful project remains a debate.

2.2.1. Project success factors

What makes a project succeed is tough to pinpoint since it varies and is hard to describe. It is essential to have a clear understanding of the success criteria before beginning any project in order to determine its level of success or failure. Early on in a project, it is crucial to determine the vital success determinants and project success criteria (Frefer, Mahmoud, Haleema, & Almamlook, 2018, p. 6). Nonetheless, there is a lot of scholarly debate on success determinants, and many writers have reached different conclusions about them. Besteiro. (2015, p. 13) discovered that there are four essential variables for determining success:

Managerial Abilities: realistic goal and objective definition, timeline definition, acceptance of the project proposal, role and responsibility identification, and team qualification.

Key success factors include establishing the project's scope, timeline, level of commitment, preparation, communication skills, and financial constraints.

Monitoring and Control: keeping an eye on meetings, identifying target deviations, controlling points, benefit and timeline variations, and budget variations.

Project concept, objectives, budget, communication, timeline, and project documentation are among the lessons learned (Besteiro, 2015, p. 13).

Still, Besteiro's (2015) study on success variables is by no means the only one. Numerous research point to several success variables. Five factors are determined by Dvir (2007, p. 12) to be important for project success:

Project efficiency: fulfilling deadlines and financial targets

Effect on the client: fulfilling specifications and obtaining client approval

Effects on the group: contentment, loyalty, and individual development

Business outcomes: growth, market share, and return on investment

Future-focused planning: new markets, new technology, and new skills.

2.3. Empirical Review

As mentioned previously, various projects may have various success criteria, and these must be established before the project is launched. The project planning process must incorporate these success elements, and they must be continuously assessed during the project.

Dvir (2007, p. 35) asserts that in addition to success elements, a project must specify its failure criteria in order to secure project success. Failure criteria are crucial for developing an effective risk management plan because they define the parameters of what can go wrong during the project.

2.3.1. Studies Conducted Abroad

Setting rules and processes for quality management has a value of its own on the success of the QMS, according to Anup, Kumar, and Saqhi (2015). The required qualities might not be reached without the commitment of top management and effective communication. (Anup, 2015) went on to say that their research found that the QMS was limited by things like a lack of technical know-how and a perception among employees that the QMS required too much paperwork, which discourages them from carrying out quality management tasks.

The empirical study by (Iyer, K., & Jha, K. (2006).demonstrated that the factors having positive contributions to achieving the desired quality level in a construction project are top management support and their competence, the interaction between project participants, owners' competence, and monitoring and feedback by project participants.

In their study, Jha & Iyer (2006) examined how raising top management support would increase the likelihood of improving performance by 15% from its current level; similarly, increasing project participant interaction would increase the probability of producing very good quality by 12% from its current level. These findings are consistent with the views of quality experts, who believe that communication and top management support are crucial components of high-quality outputs. Tzempelikos (2015) posits that research indicates that the engagement of senior management fosters a favorable association between quality production and dedication, ultimately leading to improved performance. Additionally, Jha & Iyer (2006) shown in their

research that management plays a more significant role in attaining quality in the construction business than does the labor itself.

The elements that positively influence building construction work quality, the consequences of non-adherence, and the advantages of following to the quality standard for building construction work were all disclosed in the study by Solomon, Obodoh, and Onoh (2016). Effective communication with the project team or client is the primary component that positively promotes quality in building construction activity, according to the research. It creates a transparent and trustworthy atmosphere that is conducive to productive, high-quality construction projects. Additional factors include a dedication to quality, a positive attitude toward quality, effective and efficient quality planning, adequate and complete design and documentation, an effective and efficient construction method, hiring qualified individuals for the job, effective and efficient teamwork, the use of high-quality building materials, worker supervision, motivation, training and seminars on quality management, the use of appropriate equipment for the job, and adherence to legal requirements.

2.3.2. Studies Conducted in Ethiopia

Due to the lack of system qualified organizations that could certify local businesses, Ethiopian industry found the QMP certification process to be exceedingly costly and time-consuming. Ethiopia's quality and standards body, now known as Ethiopian Conformity Assessment Enterprise, certified the system and localized the procedures in February 2009. Ethiopian construction enterprises and other businesses can now obtain internationally recognized certificates from the Ethiopian Conformity Assessment Enterprise. Additionally, the Ethiopian Quality Standard Agency provides technical assistance and training in QMP Beshah (2011). Overall, it was discovered that Ethiopia's quality management practices were deficient in all 17 tenets—including leadership, policy and strategy, resource management, process management, customer satisfaction, and business performance through analyses of the Ethiopian Quality Award (EQA) self-assessment report evaluation. Beshah & Kitaw (2014)

The main consequences of not adhering to the quality standard for building construction works are structural failure and poor workmanship, while litigation was ranked as the least beneficial effect of adhering to quality. An increase in worker morale (artisans/laborer’s) was ranked as the least beneficial effect of adhering to quality. Additionally, the study provided further details on

the construction quality plan approach, which needs to be thoroughly defined in a construction quality management plan at the pre-construction stage of any project and understood by all stakeholders.(Worku, 2019)

Inadequate planning, scheduling, material cost inflation, poor site management and supervision, excess quantity during construction, and additional work were some of the variables that Melaku (2017) on his study showed had constrained housing construction cost management. The projects were not only constrained in terms of cost perspectives; this implicates that there is also a gap in quality management practices considering that poor planning and site management resulted in poor quality caused by cost minimization strategy. Additionally, Melaku (2017) disclosed that low-quality beneficiary handovers was one of the outcomes of the housing program's cost overrun.

Thus, the premise behind this investigation is that the following variables have an impact on QMP and consequently affect project success. Skilled and knowledgeable personnel, Superior equipment and material quality, Effective communication, Backing from upper management.

These are the difficulties that quality management encounters Insufficient managerial backing, Insufficient ongoing oversight, Budgetary limitations, Insufficient communication

2.4. Research Gap

There is a dearth of prior research on the impact of quality management on project success, leaving much room for discussion. The majority of literature in the disciplines of managerial practice focuses on planning, risk management, and stockholder management and these study’s fail to specifically explain quality management’s direct effect on the project’s success.

2.4.1. Critical knowledge Gap

There appears to be a practical knowledge gap in the prior research concerning project success in addition the prior research did not address the subject of quality management in mega project infrastructures. There is still unexplored ripe data in terms of geographical area.

The reasons for MIP success remain unclear despite a great deal of research too far. Megaprojects can have an impact on MIP, but there is still a lot of research to be done on this topic. Success can be accurately measured using a wide range of success criteria. Thus, the

purpose of this study is to analyze the most important success criteria that must be met for a megaproject to be considered successful.

Because political, economic, social, and technological elements are typically specific to each nation, the conclusions of most of the research questions out there could not apply in the Ethiopian setting.

Although the project objectives are the most suitable criterion for success, there is still a difference between a project and a successful project. The answer depends on whether the goals of the project and the project management activity are the same, if success is defined as the accomplishment of goals.(*Measurement of Project Success*, n.d.) In this notion there is still a gap to be filled in understanding the relationship between quality management practices and their effect on project success.

Therefore, the goal of this study is to evaluate the quality management systems that have been put in place at the construction office of the Addis Ababa mega project office and their effect on project success.

2.4.2. Methodological Gap

Industries in the Ethiopian environment doesn't have the same scenarios with other developed institutions in other countries. The previous research (Gazal ,2023) and (Seidu, 2022).

This thesis aimed to include one of the institutions active in Ethiopia specifically Addis Ababa and will try to shed light on the strength and weaknesses, relations with various objectives.

2.5. Conceptual Framework

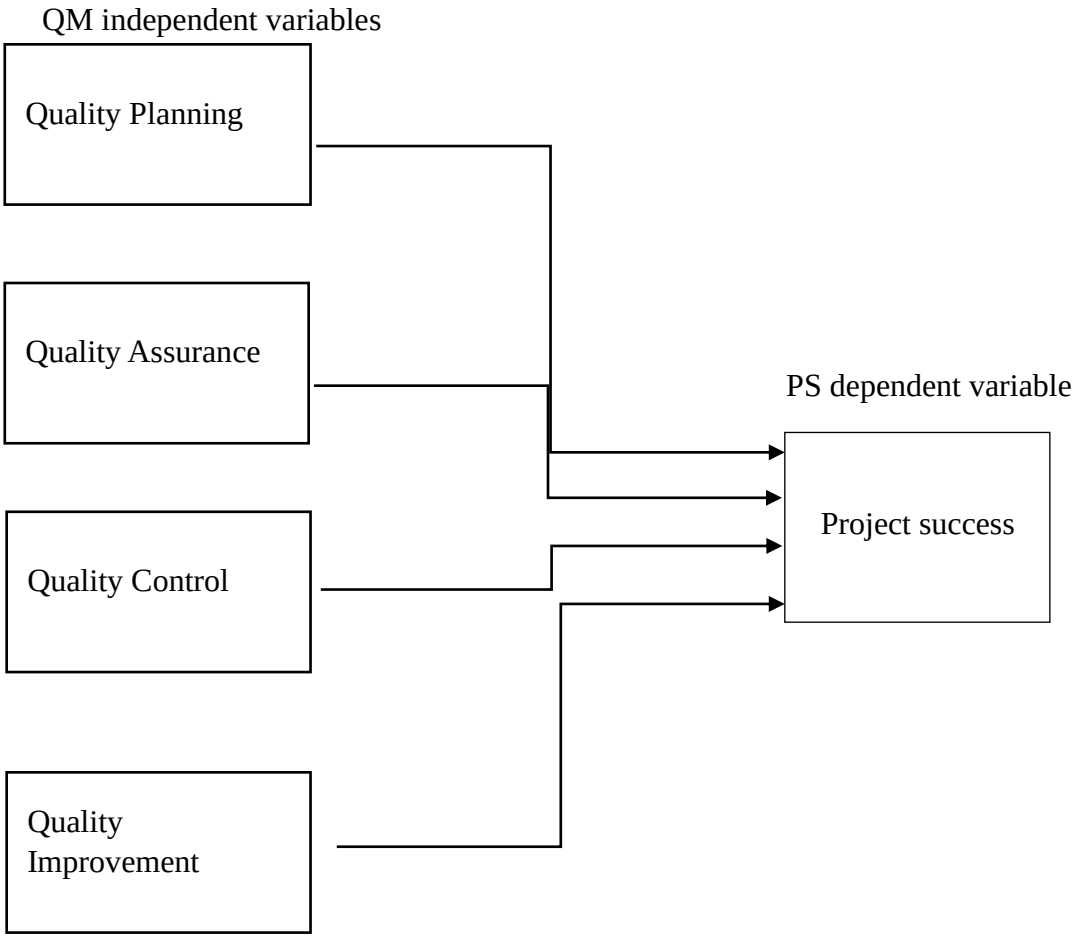
Like any other industry, the construction sector has faced obstacles that have an impact on project performance and production. Before starting other projects, it is important to identify potential critical factors that could affect the Kolfe Agriculture market center's project quality management. This will ensure project quality when it is completed because responsible parties and project implementers can take preventive measures and implement processes that would improve the overall process and meet project goals and customer satisfaction.

Finding the possible key elements by itself, however, won't solve the issue of poor-quality practices; instead, it will greatly assist the project team in enhancing these positive qualities and

closely following project specifications to cut down on errors. The fundamental methodology used to direct this investigation is displayed in the conceptual framework. As a result, the conceptual framework and variables used in this study were taken from the empirical literatures

mentioned above. The degree to which those independent variables have been implemented on the project assurance is shown in Figure 2.3.

Figure 2.3, Conceptual Framework



Source: Adapted from Jha and Iyer (2006)

2.6. Summary

Ethiopian construction is currently progressing quickly, although still having a long distance to go. That is demonstrated by the massive projects and several business centers that are being built. However, as is seen in other developing nations, it has oppressive issues.

It is common knowledge that highly developed nations implement a variety of delivery strategies together with cutting-edge technology and managerial techniques, which enable them to complete their projects successfully. The local Ethiopian construction scene has not yet fully incorporated these varied possibilities because the majority of respondents acknowledged that they operate using the conventional method of project delivery. Based on these facts this research has tried to identify the various quality management practices and their effect on the desired end of project/PS/.

CHAPTER THREE

RESEARCH METHODOLOGY

INTRODUCTION

This chapter explains the research design methodology, study participants, tools, data collection techniques, and statistical analysis of the collected data.

3.1. Research design

According to Fox and Bayat, (2007) the ability to witness a phenomenon in its fully natural and unaltered setting, the effectiveness in analyzing non-quantifiable themes and issues, and the chance to combine qualitative and quantitative data collection methods are the benefits of descriptive research. In order to evaluate project quality control and assurance procedures used in the Addis Ababa Mega Construction Office, this study used a quantitative and qualitative research methodology. It also used descriptive and explanatory research design because it provided a thorough understanding and is efficient in using my resources in the evaluation of the elements influencing project success in the instance of Kolfe Agricultural products market center.

3.2. Research approach

As creswell and clark (2007) contends that all research methods share many of the same components and that no study is entirely quantitative or qualitative. To collect additional data, particularly numerical data, the quantitative method is crucial. The other strategy is a qualitative one, which is crucial for gathering data with a qualitative character and helpful for carrying out a thorough analysis of the problem at hand. As a result, the mixed method is crucial for gathering information on the variables influencing QMPs as well as for evaluating the attitudes and opinions of various respondents regarding the effect on PS. According to Mark (2009), as cited in Aida (2015) Combining qualitative and quantitative methods offers the opportunity to strengthen the advantages of each technique while mitigating the shortcomings of the others. As a result, this study used a mixed strategy, combining quantitative and qualitative methodologies.

3.3. Population, sample size and sampling technique

The total population of both the Addis Ababa mega projects construction office and the construction manager and his staff were included taken into hand.

Census survey of the total population was chosen because the employees of the construction were hired temporarily and are not available for questionary or any other data gathering. it gave the researcher the opportunity to concentrate on a small group of informants from the project and to obtain the data needed to conduct the study and provide the best possible insight into how quality management affected the project's success. Respondents were all involved on the project.

The population of this study includes the contractors, administrative staff and the client which is the Addis Ababa city government. Since it is difficult to gain information from the client side the study only involved in the head of Addis Ababa mega projects construction office & his employees. Most of the employees who have been active in the construction site have been let go because the project has been finished. The study requires accurate and timely information, and only local workers who are involved and currently employed by the institution were considered owing to respondent restrictions.

There are 47 employees who were available including top level management and involved in on the project. out of these 5 are engineers, 1 construction manager and 1 site manager. And there are 40 employees working in the construction office and have a direct involvement in both the decision making and analysis of progress made.

The researcher considered the total population and applied a census survey because the of the population available at the time of research.

3.4. Types and sources of data

3.4.1. Data type

Quantitative and qualitative data are the two main general types of data, and they are both equally important. However, depending on the research questions and objective, one can use either or both of them to demonstrate effective and significant value to the research; for this reason, the research applied both types of data.

3.4.2. Data sources

3.4.2.1. Primary sources

Primary data sources such as surveys, questionnaires, in-field observations, and interviews were employed. The specialists working on the project served as the main sources of data.

3.4.2.2. Secondary sources

While interviews are used to get qualitative data, questionnaires and secondary data from the company was used to collect all quantitative data. The study used secondary data sources obtained from the construction office as well as articles and other comparable studies on the same and related subjects.

3.5. Data collection methods and procedures

Survey instruments included semi-structured interviews and questionnaires that were distributed to the contractor's project manager and project administrator. The key instruments for collecting primary data from primary sources were included the interview guides, and questionnaires. Concerning the questionnaire, a self-administered semi-structured questionnaire with both open-ended and closed-ended items were used to gather primary data.

In order to gain a better understanding of current project quality management practices, as well as the problems encountered and their impact on project success, questionnaires pertaining to quality aspects (quality management) and factors affecting these aspects have been prepared. Additionally, interviews with the project manager and on-site observation were conducted.

The creation of the study framework, which comprises the survey and secondary data, was the initial stage of data collecting. The foundation for the survey comprises identifying all pertinent documentation and creating interview and questioner questions.

The entire target was given questions in the second phase of the questioners' work, after which data was gathered. Similarly, interviews were conducted to obtain further detailed qualitative data from the project's primary informant

3.6. Validity and Reliability

The adviser of the researcher, friends, and project staff verified the correctness of the pilot questions and the questioners created for this study before releasing the final questionnaires to

the respondents. After taking into account all of the suggestions and critiques from various experts, the questioners' final draft was distributed.

Cronbach's alpha was used for reliability analysis, and in general, an internal consistency of 0.7 for data collected from respondents is acceptable. The Cronbach alpha score is a binary variable that ranges from 0 to 1. The higher the score, the more trustworthy the created scale is, and the closer the alpha coefficient is to 1.0, the higher the internal consistency and the opposite is also true. As a result, the SPSS data procedure was used to verify the reliability.

Table 3.1 Cronbach's Alpha analysis

Cronbach's Alpha	**Internal Consistency**
Above 0.9	EXCELLENT
0.8-0.9	GOOD
0.7-0.8	ACCEPTABLE
0.6-0.7	QUESTIONABLE
0.5-0.6	POOR
Less than 0.5	UNACCEPTABLE

Source: Own Survey,2024

3.7. Methods of data processing and analysis

Following the acquisition of the necessary data from the designated sources utilizing the aforementioned equipment, both qualitative and quantitative data analysis techniques were used. SPSS (Version 20) was used to examine the data collected from the questionnaire respondents used to evaluate the quality management procedures and problems. The software will get the case responses when they have been arranged, coded, and defined. After that, descriptive methods of analysis were employed. And tables and figures were used to display the results.

Based on the data gathered, descriptive statistics was utilized to communicate and summarize the outcome. The case study's current QMP was examined using graphs, tables, and charts. I have employed regression analysis for this study. In essence These are the assumptions for regression analysis, together with independent and dependent variables.

Linear regression analysis is based on the following set of assumptions:

Assumption of linearity. There is a linear relationship between dependent and independent variables.

Assumption of absence of co linearity or multi co linearity. There is no correlation between two or more independent variables.

Assumption of normal distribution. The data for the independent variables and dependent variable are normally distributed.

Responses on a Likert-type scale is common in survey-type research, such as “strongly agree”, “agree”, “neutral”, “disagree” or “strongly disagree.” Or the responses in grading survey may be “Excellent,” “Very good,” “Good,”, “Relatively good”, “Pass” or “Fail”. Very often these responses can be coded as 1 (excellent), 2 (very good), 3 (good), 4 (relatively good), 5 (pass) and 6 (fail). These are ordinal scales in that there is clear ranking among the categories but we cannot say that 1 (excellent) is twice 2 (very good) or 3 (good) is three times 1 (excellent).

To aid in the interpretation of the data, Microsoft Excel and/or the statistical analysis software SPSS was used to code and analyze the questioner's raw data. There was a combination of qualitative and quantitative approaches to data presentation. in order to display the data in an easy-to-understand manner so that the viewer may immediately take the conclusion from the data.

3.8 Ethical considerations

In order to ensure that the researcher obtained permission from the management of the target company (Addis Ababa Mega Projects Construction Office) before beginning the research, the framework for research ethics contains important guidelines. Prior to the data collection, the company received a letter from St. Marry. Participants in the study gave their consent, and all information collected was utilized only for academic purposes. Respondents were guaranteed the confidentiality of any information provided when needed.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION & PRESENTATION

INTRODUCTION

The study's findings, which came from the questionnaires and interviews that were designed to meet the desired goal, will be covered in this chapter.

A few procedures were taken in order to provide the survey data in an exact and sufficient manner. The data was first screened to remove any unnecessary information. In other words, the properly completed surveys were collected for processing. For descriptive statistical analysis, a coding scheme was created and data was imputed into the Statistical Package for Social Scientists, version 25 (SPSS). The amount of disagreement with the corresponding statement was coded as 1, and the maximum level of agreement was coded as 5.

Translating raw data into meaningful information required descriptive analysis and statistical computation. Frequencies and percentages were used to examine the descriptive data in order to determine the respondents' opinions regarding the quality management procedures used in building projects. Tables and charts were used to present the analysis's findings.

4.1. Response Rate

47 questionnaires in total were given to the sample population, which consists of the employees of the contractor Addis Ababa mega construction office. This comprises the engineers who worked on the infrastructure project for the Kolfe Agriculture Market Center. Following data collection, each of the 47 questioners had their answers back. This results in a 100% response rate.

The standards for survey response rates have increased. For the majority of research, response rates of roughly 60% should be the aim of researchers and are undoubtedly what editors and associate editors of journals anticipate. A response rate of at least 80% is anticipated for survey research meant to represent all project management institutions and colleges (Fincham, 2008).

A total of 47 questionaries were distributed and all have been returned with no exception.

Table 4.1 Response Rate

	Frequency	**Percent**	**Valid percent**	**Cumulative percent**
Returned	47	100%	100%	100%
Not returned	0	0	0	0
Total	**47**	**100%**	**100%**	

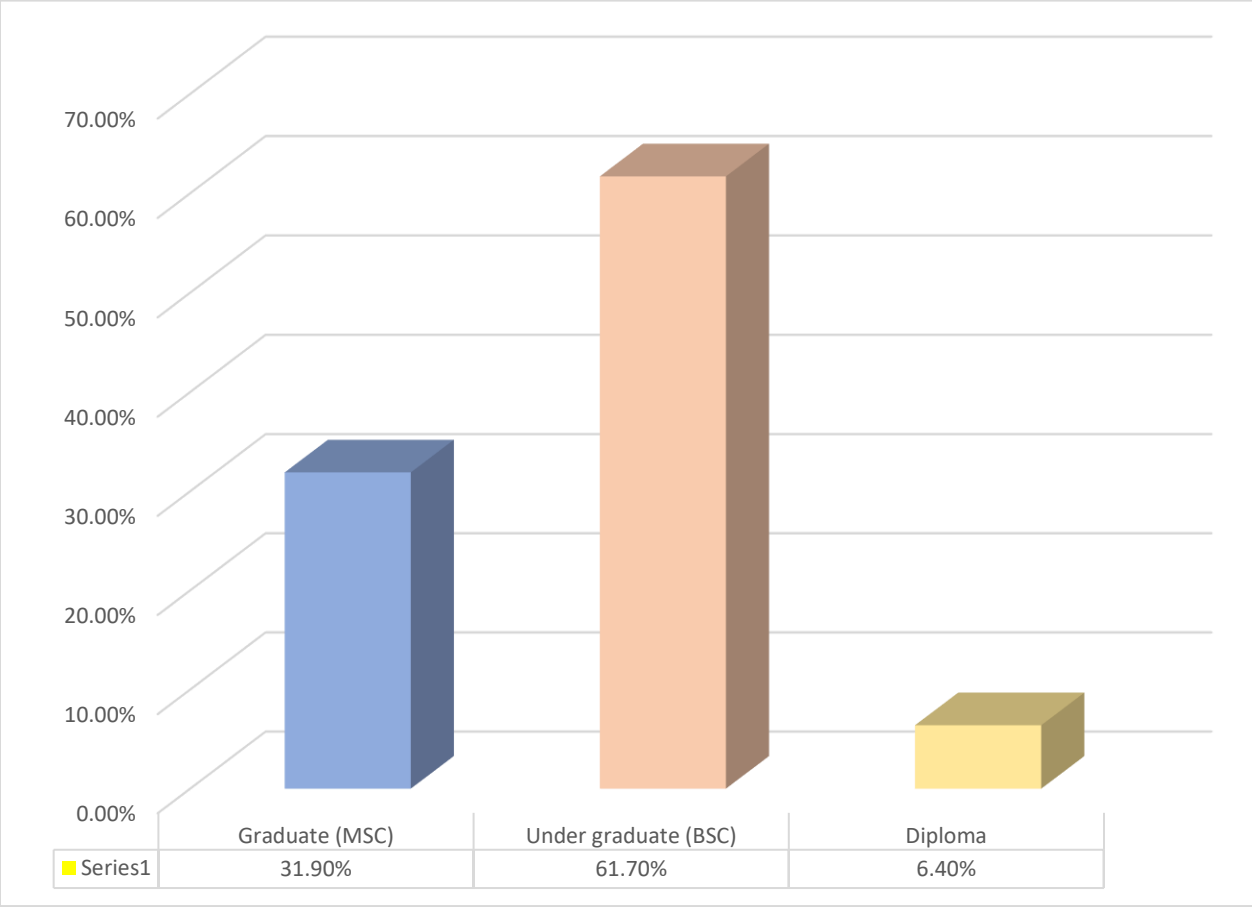
Source: Own Survey,2024

As per Braun and Clarke (2008), theme analysis needs to be regarded as an essential technique for analyzing qualitative data. As a result, in order to evaluate the data for this study, thematic analysis was used to find, examine, and describe patterns in the interview and questionnaire data. For the purpose of this study, two top managers were selected through a structured interview process. These managers included one each from the Kolfe Agricultural Market Center, the Addis Ababa Mega Projects Construction Office, and a selected manager from the contractor's side.

4.2. Profile of Respondents

This section will display the respondents' general information in tabular and diagrammatic style. The diagrams illustrate the analysis of the aforementioned elements. For ease of understanding, the participants' positions, gender, and educational background are depicted using a column chart.

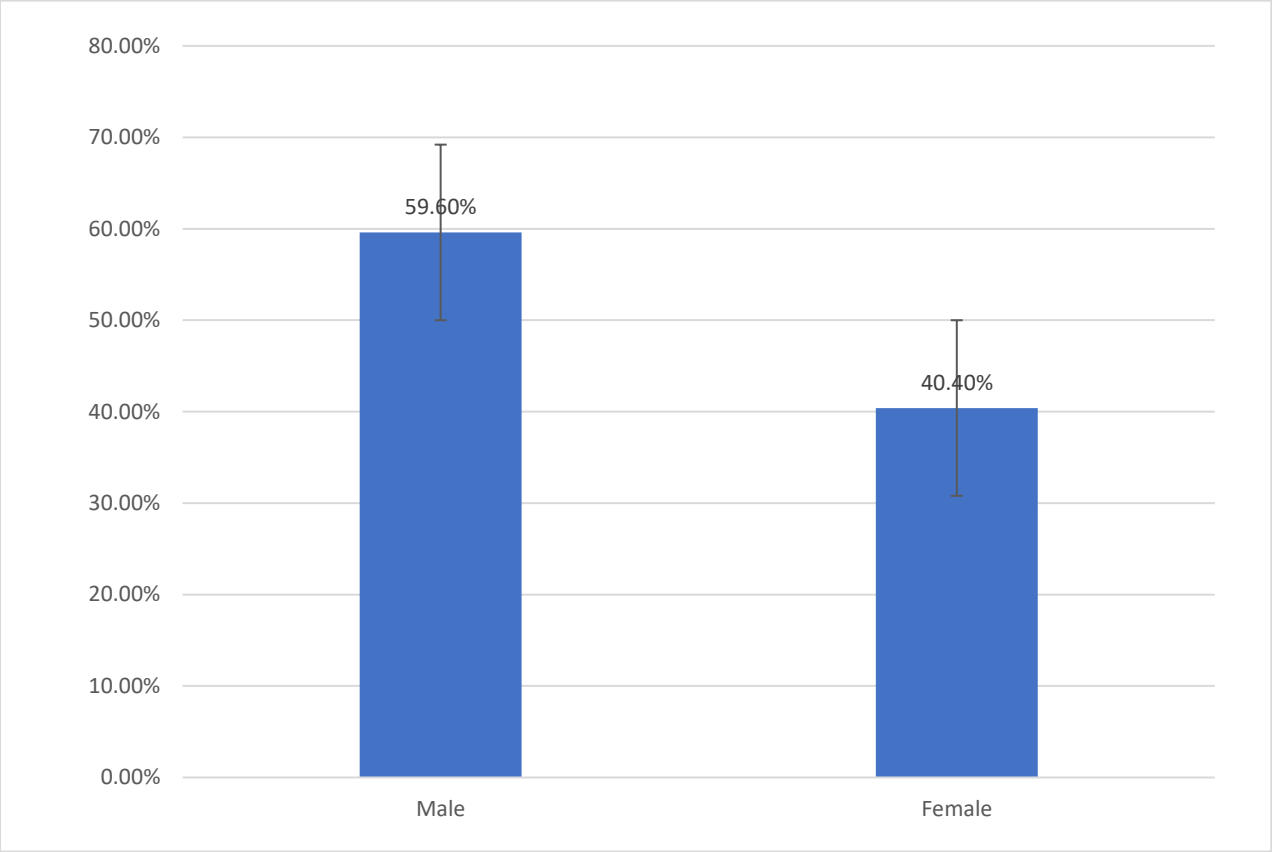
Figure 4.1 Respondent's Educational Background



Source: Own Survey,2024

Concerning educational qualification of respondents, 61.7% holds BSc; while 31.9% holds MSc. In addition, respondents with Diploma accounts to be 6.40%. Still the results showed that every participant was qualified in their field of work, indicating that most of the Kolfe Agriculture Center building participants held graduate-level degrees or first degrees, with very few holding diplomas.

Figure 4.2 Respondent's Gender



Source: Own Survey,2024

As it is indicated in the figure 4.2 above, 59.60% of respondents were male and 40.40% of them were females. This implies the majority of respondents were men and furthermore indicated a male predominance in the project quality management system.

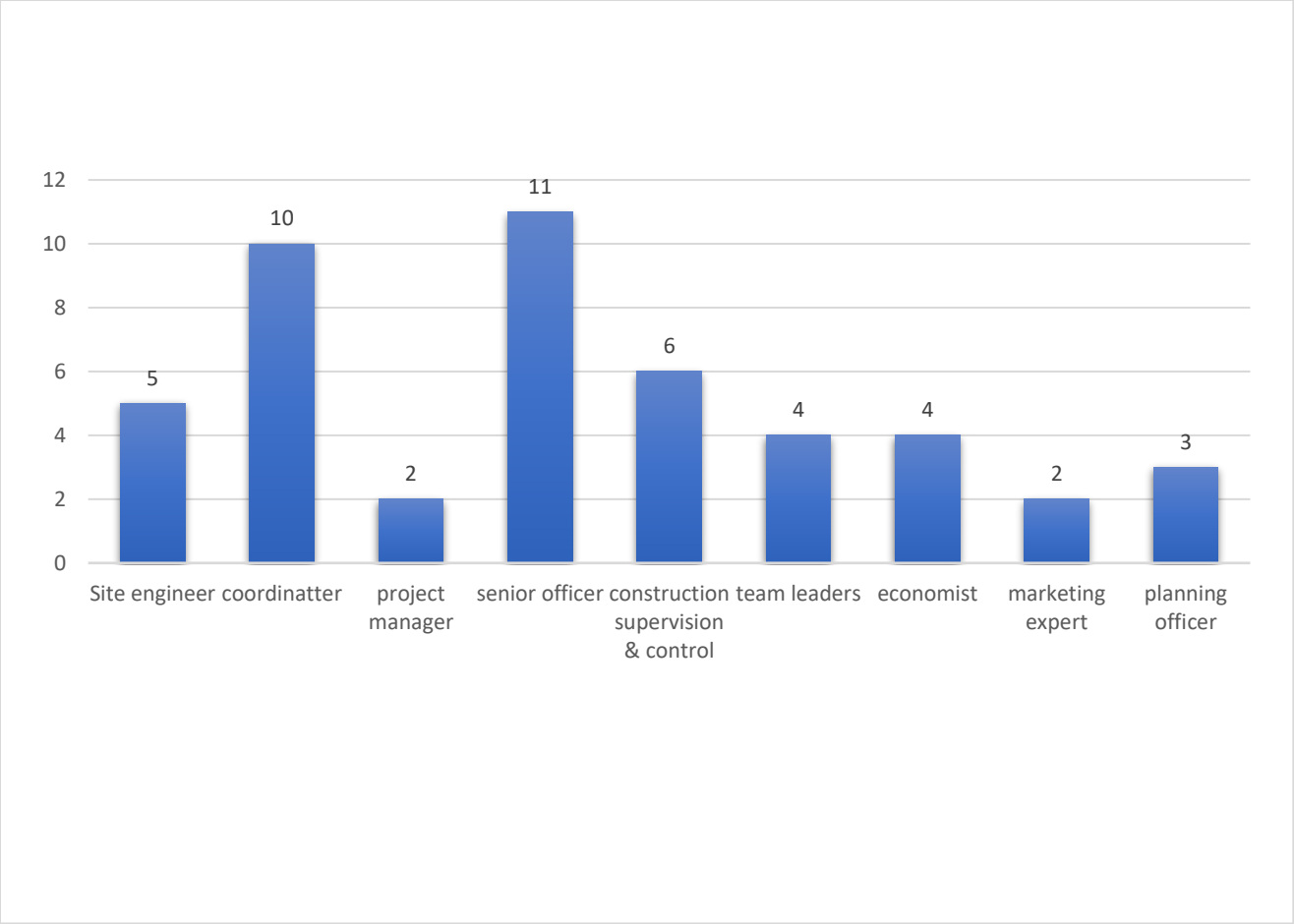


Figure 4.3 Respondent's position of Work, Source: Own Survey,2024

Five respondents were site engineers for the Kolfe Agriculture Market Project, according to the analysis shown in Figure 4.3. Ten coordinators, two project managers, eleven senior officers in the 4 Kilo Main Office, six experts in construction supervision and control, four team leaders, four experts in building economics, two more experts in marketing, and the remaining three experts in planning were involved in the project's planning.

The experience of the participants, the formal quality management system's implementation, the length of the implementation, the absence of the formal quality management system's implementation, potential motivators for initiating the system, and the perception of quality are all represented in the tables under the general information.

Table 4.2 Respondent’s Work Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
	0-5 years	7	14.9	14.9	14.9
	6-10 years	25	53.2	53.2	68.1
	11-25 years	15	31.9	31.9	100.0
	Total	**47**	**100.0**	**100.0**	

Source: Own Survey,2024

The research revealed that most of the participants had between 6 and 10 years of experience. The respondents' job experience, as indicated in Table 4.2, was 7 (14.9%), 25 (53.2%), and 15 (31.9%) with 0-5, 6-10, and 11-25 years of experience, respectively.

4.3. Descriptive Analysis

Under this section descriptive analysis is discussed for independent variables (QP, QA, QC, QI) by using frequency, percentage, mean and standard deviation has been discussed. In doing so mean value of quality planning as 4.15, mean value of quality assurance as 4.122, mean value of quality control as 4.158, mean value of quality improvement as 4.05 will be used as suggested by the result.

4.3.1. Quality Planning

"PMBOK" describes quality planning as the procedure for "figuring out which quality standards apply to a project and how to meet those standards": Put differently, it refers to strategizing how to meet deliverable quality standards for both the process and the product: "Quality is the degree to which a set of inherent characteristics fulfill requirements”.

Table 4.3 Quality Planning

Question	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean	Standard Deviation
Quality plan was implemented	1 (2.1)	-	5 (10.6)	25 (53.2)	16 (34.0)	4.17	.789
Quality plan effect on stakeholder		1 (2.1)	4 (8.5)	26 (55.3)	16 (34.0)	4.21	.690
Quality plan effect on project scope	1 (2.1)	3 (6.4)	3 (6.4)	28 (59.6)	12 (25.5)	4.00	.885
Quality plan effect on project schedule	1 (2.1)	2 (4.3)	4 (8.5)	24 (51.1)	16 (34)	4.11	.890
Quality plan effect on project budget	-	1 (2.1)	6 (12.8)	20 (42.6)	20 (42.6)	4.26	.765

Source: Own Survey,2024

As it is depicted in table 4.3 above, respondents were asked whether quality plan was implemented or not; accordingly, 2.1% strongly disagreed, none disagreed, and 10.6% neutral. But, 53.2% agreed and 34.0% strongly agreed to the same statement. Mean value of the statement also shows 4.17 and standard deviation value shows .789. This implies employees had higher perception of quality planning being implemented. Regarding statement which says quality plan effect on stakeholder, 2.1% of respondents strongly disagreed, 4.3% disagreed, and 12.8% neutral. But, 53.2% agreed and 27.7% strongly agreed to the statement. Mean value of the statement also shows 4.00 and standard deviation value also shows .885. This implies employees had higher perception of quality plan affecting stakeholder interest. Regarding statement which says quality plan effect on project scope, none of respondents strongly disagreed, 4.3% disagreed, and 8.5% neutral. But, 55.3% agreed and 31.9% strongly agreed to the statement. Mean value of the statement also shows 4.15 and standard deviation value also shows .751. This implies employees had higher perception of quality plan having high effect on project scope. Regarding statement which says quality planning affects project schedule, none of respondents strongly disagreed, 10.6% disagreed, and 14.9% neutral. But, 55.3% agreed and 19.1% strongly agreed to the statement. Mean value of the statement also shows 3.83 and standard deviation value also shows .868. This implies employees had higher perception of quality planning affecting project schedule. Regarding statement which says quality plan effect on project budget,

none of respondents strongly disagreed, 4.3% disagreed, and 8.5% neutral. But, 61.7% agreed and 25.5% strongly agreed to the statement. Mean value of the statement also shows 4.09 and standard deviation value also shows .717. This implies employees had higher perception of quality planning having a high effect on project budget.

Overall mean score of quality planning shows 4.15, which implies quality planning was implemented and there is a high perception from employees.

Interview response also shows management spent many hours in quality planning as well as going over the plans in order to make it more applicable.

The above result is similar with the findings of the research.

4.3.2. Quality Assurance

Monitoring and evaluating different project aspects on an ongoing basis is how quality assurance is carried out. Its goal is to guarantee that the job is produced at a minimum acceptable quality level. Quality assurance is a component of quality management that focuses on giving assurance that quality requirements are met, according to ISO 9001:2000.

Table 4.4 Quality Assurance

Question	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean	Standard Deviation
Quality Assurance was implemented	-	2 (4.3)	5 (10.6)	21 (44.7)	19 (40.4)	4.21	.806
Quality Assurance effect on stakeholder	1 (2.1)	3 (6.4)	5 (10.6)	13 (27.7)	25 (53.2)	4.23	1.026
Quality Assurance effect on project scope	1 (2.1)	2 (4.3)	5 (10.6)	22 (46.8)	17 (36.2)	4.11	.914
Quality Assurance effect on project schedule	1 (2.1)	3 (6.4)	6 (12.8)	27 (57.4)	10 (21.3)	3.89	.890
Quality Assurance effect on project budget	-	-	5 (10.6)	29 (61.7)	13 (27.7)	4.17	.601

Source: Own Survey,2024

As it is depicted in table 4.4 above, respondents were asked whether quality assurance was implemented or not; accordingly, none strongly disagreed, 4.3% disagreed, and 10.6% neutral. But, 44.7% agreed and 40.4% strongly agreed to the same statement. Mean value of the statement also shows 4.21 and standard deviation value shows .806. This implies employees had higher perception of quality assurance being implemented. Regarding statement which says quality assurance effect on stakeholder, 2.1% of respondents strongly disagreed, 6.4% disagreed, and 10.6% neutral. But, 27.7% agreed and 53.2% strongly agreed to the statement. Mean value of the statement also shows 4.23 and standard deviation value also shows 1.026. This implies employees had higher perception of quality assurance affecting stakeholder interest. Regarding statement which says quality assurance effect on project scope, 2.1% of respondents strongly disagreed, 4.3% disagreed, and 10.6% neutral. But, 46.8% agreed and 36.2% strongly agreed to the statement. Mean value of the statement also shows 4.11 and standard deviation value also shows .914. This implies employees had higher perception of quality assurance having high effect on project scope. Regarding statement which says quality assurance affects project schedule, 2.1% of respondents strongly disagreed, 6.4% disagreed, and 12.8% neutral. But, 57.4% agreed and 21.3% strongly agreed to the statement. Mean value of the statement also shows 3.89 and standard deviation value also shows .890. This implies employees had higher perception of quality assurance affecting project schedule. Regarding statement which says quality assurance effect on project budget, none of respondents strongly disagreed, none disagreed, and 10.6% neutral. But, 61.7% agreed and 27.7% strongly agreed to the statement. Mean value of the statement also shows 4.17 and standard deviation value also shows .601. This implies employees had higher perception of quality assurance having a high effect on project budget.

Overall mean score of quality assurance shows 4.122, which implies quality assurance was implemented and there is a high perception from employees.

Interview response also shows management has practiced as well as making adjustments to attain quality assurance.

The above result is similar with the findings of the research.

4.3.3. Quality Control

Quality control means addressing any issues that come up while the project is underway. These could include unanticipated obstacles, timetable delays, and financial difficulties. Although it is not required, quality control is frequently carried out by a Quality Control Department or other organizational entity with a similar name.

Table 4.5 Quality Control

Question	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean	Standard Deviation
Quality Control was implemented	1 (2.1)	-	2 (4.3)	23 (48.9)	21 (44.7)	4.34	.760
Quality Control effect on stakeholder	1 (2.1)	3 (6.4)	6 (12.8)	19 (40.4)	18 (38.3)	4.06	.987
Quality Control effect on project scope	1 (2.1)	2 (4.3)	6 (12.8)	24 (51.1)	14 (29.8)	4.02	.897
Quality Control effect on project schedule	1 (2.1)	3 (6.4)	5 (10.6)	20 (42.6)	18 (38.3)	4.09	.974
Quality Control effect on project budget	-	2 (4.3)	4 (8.5)	20 (42.6)	21 (44.7)	4.28	.800

Source: Own Survey,2024

As it is depicted in table 4.5 above, respondents were asked whether quality control was implemented or not; accordingly, 2.1% strongly disagreed, none disagreed, and 4.3% neutral. But, 48.9% agreed and 44.7% strongly agreed to the same statement. Mean value of the statement also shows 4.34 and standard deviation value shows .760. This implies employees had higher perception of quality control being implemented. Regarding statement which says quality control effect on stakeholder, 2.1% of respondents strongly disagreed, 6.4% disagreed, and 12.8% neutral. But, 40.4% agreed and 38.3% strongly agreed to the statement. Mean value of the statement also shows 4.06 and standard deviation value also shows .987. This implies employees had higher perception of quality control affecting stakeholder interest. Regarding statement which says quality control effect on project scope, 2.1% of respondents strongly disagreed, 4.3% disagreed, and 12.8% neutral. But, 51.1% agreed and 29.8% strongly agreed to the statement. Mean value of the statement also shows 4.02 and standard deviation value also shows .897. This

implies employees had higher perception of quality control having high effect on project scope. Regarding statement which says quality control affects project schedule, 2.1% of respondents strongly disagreed, 6.4% disagreed, and 10.6% neutral. But, 42.6% agreed and 38.3% strongly agreed to the statement. Mean value of the statement also shows 4.09 and standard deviation value also shows .974. This implies employees had higher perception of quality control affecting project schedule. Regarding statement which says quality control effect on project budget, none of respondents strongly disagreed, 4.3% disagreed, and 8.5% neutral. But, 42.6% agreed and 44.7% strongly agreed to the statement. Mean value of the statement also shows 4.28 and standard deviation value also shows .800. This implies employees had higher perception of quality control having a high effect on project budget.

Overall mean score of quality control shows 4.158, which implies quality control was implemented and there is a high perception from employees.

Interview response also shows management has practiced as well as making adjustments to maintain quality control.

The above result is similar with the findings of the research.

4.3.4. Quality Improvement

Rose (2014, p. 28) asserts that while fulfilling project requirements may result in a happy client, exceeding customer expectations is necessary to guarantee the next contract. This is accomplished by facilitating ongoing enhancements to an organization's project management procedures. This calls for efficient communication both inside and outside the project, the ability to recognize issues and take appropriate action, as well as the ability to recognize opportunities and seize them.

Table 4.6 Quality Improvement

Question	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean	Standard Deviation
Quality Improvement was implemented	1 (2.1)	-	6 (12.8)	25 (53.2)	15 (31.9)	4.13	.797
Quality Improvement effect on stakeholder	2 (4.2)	-	9 (19.1)	23 (48.9)	13 (27.7)	3.96	.932

Quality Improvement effect on project scope	3 (6.4)	2 (4.3)	4 (8.5)	23 (48.9)	15 (31.9)	3.96	1.083
Quality Improvement effect on project schedule	2 (4.3)	-	7 (14.9)	21 (44.7)	17 (36.3)	4.09	.952
Quality Improvement effect on project budget	2 (4.3)	1 (2.1)	5 (10.6)	21 (44.7)	18 (38.3)	4.11	.983

Source: Own Survey,2024

As it is depicted in table 4.6 above, respondents were asked whether quality improvement was implemented or not; accordingly, 2.1% strongly disagreed, none disagreed, and 12.8% neutral. But, 53.2% agreed and 31.9% strongly agreed to the same statement. Mean value of the statement also shows 4.13 and standard deviation value shows .797. This implies employees had higher perception of quality improvement being implemented. Regarding statement which says quality improvement effect on stakeholder, 4.2% of respondents strongly disagreed, none disagreed, and 19.1% neutral. But, 48.9% agreed and 27.7% strongly agreed to the statement. Mean value of the statement also shows 3.96 and standard deviation value also shows .932. This implies employees had higher perception of quality improvement affecting stakeholder interest. Regarding statement which says quality improvement effect on project scope, 6.4% of respondents strongly disagreed, 4.3% disagreed, and 8.5% neutral. But, 48.9% agreed and 31.9% strongly agreed to the statement. Mean value of the statement also shows 3.96 and standard deviation value also shows 1.083. This implies employees had higher perception of quality control having high effect on project scope. Regarding statement which says quality improvement affects project schedule, 4.3% of respondents strongly disagreed, none disagreed, and 14.9% neutral. But, 44.7% agreed and 36.3% strongly agreed to the statement. Mean value of the statement also shows 4.09 and standard deviation value also shows .952. This implies employees had higher perception of quality improvement affecting project schedule. Regarding statement which says quality improvement effect on project budget, 4.3% of respondents strongly disagreed, 2.1% disagreed, and 10.6% neutral. But, 44.7% agreed and 38.3% strongly agreed to the statement. Mean value of the statement also shows 4.11 and standard deviation value also shows .983. This implies employees had higher perception of quality improvement having a high effect on project budget.

Overall mean score of quality improvement shows 4.05, which implies quality control was implemented and there is a high perception from employees.

Interview response also shows management has practiced as and made a consistent effort in trying to improve the quality management.

The above result is similar with the findings of the research.

4.4. Quality Management Practices and Challenges

The survey questions about the quality management system techniques used during the Kolfe Agriculture Center project implementation are shown in the following tables. Participants were asked to indicate how much they agreed with each question as it applied to the project.

Table 4.7 Implementation of Formal Quality Management System

Answer	Frequency	Percent	Valid Percent
Yes	36	76.6	76.6
No	10	21.3	21.3
Other	1	2.1	2.1
Total	**47**	**100.0**	**100.0**

Source: Own Survey,2024

Table 4.7 presents the results of the analysis of the formal quality management system implementation. It indicates that most respondents (n = 10; 21.3%) answered in the affirmative when asked if the formal quality management system was implemented in the Kolfe Agriculture

Center project. One respondent (2.1%) mentioned alternative methods used during the construction project implementation.

Table 4.8 Duration of implementation of quality management system

	Frequency	Percent	Valid Percent	Cumulative Percent
0-5 Years	22	46.8	46.8	46.8
6-10 Years	24	51.1	51.1	97.9
Above 10 Years	1	2.1	2.1	100
Total	**47**	**100**	**100**	

Source: Own Survey,2024

Table 4.8's analysis revealed how long participants had been using the formal quality management system. Of those who said yes, 22 (46.8%) had been using it for 0–5 years, indicating that most participants had used it for that amount of time. 24 (51.1%) respondents said they had been using the formal quality management system for 6–10 years, while 1 (2.1%) respondent disagreed with the use of the system during project implementation.

All the respondents of the survey Agree upon using Quality Management system unanimously.

Table 4.9 Factors that could be motivational to start quality management

	Frequency	Percent	Valid Percent	Cumulative Percent
Pressure from competitors	20	42.6	42.6	42.6
Demanding customers	7	14.9	14.9	57.4

Your company's chief executive/manager	6	12.8	12.8	70.2
Need to reduce costs and improve performance	12	25.5	25.5	95.7
International standards	2	4.3	4.3	100.0
Total	**47**	**100.0**	**100.0**	

Source: Own Survey,2024

Table 4.9's analysis of potential driving forces for implementing quality management revealed that 20 respondents (42.6%), 7 respondents (14.9%), 6 respondents (12.8%), 12 respondents (25.5%), and 2 respondents (4.3%) cited pressure from rivals, discerning clients, the CEO of the business, the need to cut expenses while enhancing performance, and compliance with international standards. raise performance and, correspondingly, worldwide standards. This demonstrated that most of the participants understood that it was due to competition pressure.

Table 4.10 Perception of Quality

	Frequency	Percent	Valid Percent	Cumulative Percent
Elimination of defects	20	42.6	42.6	42.6
A tool to increase profits	10	21.3	21.3	63.8
A competitive advantage	12	25.5	25.5	89.4
Other	5	10.6	10.6	100.0
Total	**47**	**100.0**	**100.0**	

Source: Own Survey,2024

According to Table 4.10, The 20 respondents (42.6%), 10 respondents (21.3%), 12 respondents (25.5%), and the remaining 5 respondents (10.6%) saw quality as the removal of defects, a tool to increase profit, competitive advantage, and other, respectively. According to the findings, most respondents defined quality as the absence of flaws, which is consistent with the idea that high-quality products are defect-free (Rose, 2005).

Table 4.11 Quality Management Practices

Question	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean	Standard Deviation
Quality plan is prepared	1 (2.1)	3 (6.4)	3 (6.4)	20 (42.6)	20 (42.6)	4.17	.963
Quality plan is communicated	-	2 (4.3)	4 (8.5)	26 (55.3)	15 (31.9)	4.15	.751
Quality assurance activities	-	2 (4.3)	1 (2.1)	31 (66.0)	13 (27.7)	4.17	.670
Quality control activities	-	2 (4.3)	3 (6.4)	31 (66.0)	11 (23.4)	4.09	.686
Quality improvement activities	1 (2.1)	3 (6.4)	2 (4.3)	25 (53.2)	16 (34.0)	4.11	.914
Quality policies	2 (4.3)	3 (6.4)	2 (4.3)	27 (57.4)	13 (27.7)	3.98	.989
Quality improvement coordinating body	1 (2.1)	2 (4.3)	6 (12.8)	25 (53.2)	13 (27.7)	4.00	.885
Quality improvement tools & techniques	1 (2.1)	4 (8.5)	4 (8.5)	27 (57.4)	11 (23.4)	3.91	.929
company practices continuous improvement	-	4 (8.5)	5 (10.6)	27 (57.4)	11 (23.4)	3.96	.833
system for quality planning.	-	5 (10.6)	7 (14.9)	26 (55.3)	9 (19.1)	3.83	.868
system for quality control.	2(4.3)	1 (2.1)	4 (8.5)	26 (55.3)	14 (29.8)	4.04	.932

system for quality improvement	-	3 (6.4)	3 (6.4)	31 (66.0)	10 (21.3)	4.02	.737
Quality planning procedures	-	2 (4.3)	4 (8.5)	29 (61.7)	12 (25.5)	4.09	.717
Quality improvement procedures	1 (2.1)	2 (4.3)	5 (10.6)	25 (53.2)	14 (29.8)	4.04	.884
Employees are well equipped	1 (2.1)	3 (6.4)	6 (12.8)	22 (46.8)	15 (31.9)	4.00	.956
Required human resource	2 (4.3)	4 (8.5)	4 (8.5)	25 (53.2)	12 (25.5)	3.87	1.035

Source: Own Survey,2024

Note: -**N=47**

In this study I will make my decision using the perceptions of the respondents, thus to do this I used the weighted average value. To calculate the weighted average value, I will simply sum up the mean values for the items and divide by the total number of total items.

Decision-Weighted average=64.43/16=**4.02**

Which means if mean ≥ 4.02 high perception

And if mean<4.02 low perception

The analysis for project quality management practices revealed the following mean results for quality plans are prepared before starting job (4.17), quality plan is communicated to all project team (4.15), quality assurance activities are implemented regularly (4.17), quality control activities are implemented regularly (4.09), quality improvement activities are implemented regularly (4.11), system for quality control (4.04), system for quality improvement (4.02), for quality planning procedures (4.09), quality improvement procedures (4.04), are all the means with high perceptions from employees to indicate high level of implementation and, quality policies are agreed upon by decision makers (3.98), the quality improvement coordinating body mean (4.00), quality improvement tools and techniques (3.91), company practices and continuous improvement(3.96), for system for quality planning (3.83), employees are well equipped and required human resource are (4.00) and (3.87) respectively show there is a low and

average level of implementation and perception from the employees. This shows that the lowest perception in implementation according to the employees is system for quality planning with a mean of (3.83).

Table 4.12 Quality management challenges

Question	Strongly Disagree %	Disagree %	Neutral %	Agree %	Strongly Agree %	Mean	Standard Deviation
Lack of continuous supervision	2 (4.3)	3 (6.4)	5 (10.6)	22 (46.8)	15 (31.9)	3.96	1.042
Financial constraints	1 (2.1)	4 (8.5)	6 (12.8)	21 (44.7)	15 (31.9)	3.96	.999
Communication	1 (2.1)	3(6.4)	7(14.9)	21 (44.7)	15 (31.9)	3.98	.967
coordination with supplier.	-	6(12.8)	7(14.9)	21 (44.7)	13 (27.7)	3.87	.969
Lack of management support	1 (2.1)	4 (8.5)	9 (19.1)	22 (46.8)	11 (23.4)	3.81	.970

Source: Own Survey,2024

As in the previous in this study I will also make my decision using the perceptions of the respondents to point out the main challenges in quality management, thus to do this I will use the weighted average value again. To calculate the weighted average value, I will simply sum up the mean values for the items and divide by the total number of total items.

19.58/5=**3.91** so if mean ≥3.9 high perception

If mean< 3.9 low perception

The analysis of quality management challenges revealed the mean results as follows; lack of continuous supervision (3.96), financial constraints (3.96), communication (3.98) are the activities with the highest mean and in which the employees have high perception towards to and coordination with supplier (3.87) as well as lack of management support (3.81) are activities with low perception seen as less challenging in quality management.

4.5. Effect and Level of Implementation of Selected Variables

The mean and standard deviation were determined using SPSS, as indicated in table 10, to demonstrate the degree of execution of a regular budget update, commitment of all participants, management support, availability of trained resources, and communication/interaction between project participants.

Table 4.13 Effect of Quality management on selected variables

	N	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error
Quality management effect on stakeholder satisfaction	47	3.94	0.987	-0.860	0.347
Quality management effect project on scope	47	3.81	1.035	-1.195	0.347
Quality management effect on project schedule	47	3.94	0.987	-1.143	0.347
Project quality management effect on project budget	47	3.77	1.047	-0.930	0.347

**** QMEffect =1-4 (Very low, Low, Medium and High)***

Source: Own Survey,2024

As shown in Table 4.13 the mean value of project quality management effect on the project budget (3.77) was medium in terms in its application but lower compared to the other variables of quality management effect on stakeholder satisfaction (3.94), quality management effect on project scope (3.81), quality management effect on project schedule (3.94), which means project quality management has the least effect on project success in this case. All the quality management variables have a medium effect on the overall project success according to this data.

Table 4.14 Level of implementation of selected variables

Implementation of selected independent variables					
	N	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Std. Error
Quality planning was implemented	47	4.06	0.845	-1.481	0.347
Planning effect stakeholder satisfaction	47	4.11	0.914	-1.287	0.347
Quality planning effect project scope	47	3.64	1.072	-1.206	0.347
Quality planning effect project schedule	47	3.89	0.961	-1.315	0.347
Quality planning effect on project budget	47	3.85	1.021	-0.969	0.347
Quality assurance was implemented	47	4.02	0.921	-0.742	0.347
Quality assurance effect on stakeholder satisfaction	47	4.04	1.083	-1.054	0.347
Quality assurance effect on project scope	47	3.87	0.992	-0.991	0.347
Quality assurance effect on project schedule	47	3.57	1.137	-0.562	0.347
Quality assurance effect on project budget	47	3.98	1.011	-1.144	0.347
Quality control was implemented	47	4.11	0.890	-1.373	0.347
Quality control effect on stakeholder satisfaction	47	3.87	0.924	-0.948	0.347
Quality control effect on project scope	47	3.83	1.110	-1.144	0.347
Quality control effect on project schedule	47	3.87	1.055	-1.010	0.347
Quality control effect on project budget	47	4.09	0.929	-1.366	0.347
Quality improvement was implemented	47	4.06	0.870	-1.162	0.347

Quality improvement effect on stakeholder satisfaction	47	3.98	0.944	-1.253	0.347
Quality improvement effect on project scope	47	3.72	1.036	-1.122	0.347
Quality improvement effect on project schedule	47	3.81	1.076	-1.021	0.347
Quality improvement effect on project budget	47	3.96	0.977	-1.227	0.347

**** QP, QA, QC & QI =1-4 (Very low, Low, Medium and High)***

Source: Own Survey,2024

Table 4.14 shows the mean of various independent variables implemented in the project the higher their level of implementation the higher their effect on project success, Quality planning was implemented (4.06) which has a high implementation and in turn have high effect on PS, planning effect stakeholder satisfaction (4.11) had the highest mean which indicates to be the highest level implementation and effect on PS, as for quality planning effect project scope(3.64) it has medium implementation and effect on PS, quality planning effect project schedule (3.89) has a medium level of implementation, just like quality planning effect on project budget with a mean of (3.85), Quality assurance was implemented (4.02) which is high implementation and effect on the PS, quality assurance effect on stakeholder satisfaction (4.04) is high in its implementation and effect on PS, quality assurance effect on project scope (3.87) has a medium effect on PS and its implementation as well, with quality assurance effect on project schedule (3.57) which is medium but to have the least effect on project success, quality assurance effect on project budget (3.98) with medium implementation and effect, Quality control was implemented (4.11) which shows a high implementation and effect on PS, quality control effect on stakeholder satisfaction (3.87) medium effect and implementation on PS, quality control effect on project scope (3.83) medium implementation and effect on PS , quality control effect on project schedule (3.87) has a medium level of implementation, quality control effect on project budget (4.09) also has a high in implementation and effect on project success, Quality improvement was implemented (4.06) which is high level, quality improvement effect on stakeholder satisfaction (3.98) medium implementation and effect on PS, also quality improvement effect on project scope (3.72) to be the other independent variable to have the least level effect on project success and medium implementation, quality improvement effect on project schedule (3.81) has medium level of implementation, quality improvement effect on

project budget (3.96) is also a variable with the medium to the mean of implementation and effect on PS.

4.6. Level of quality management performance

Table 4.15 Level of Quality Management Performance

Level of quality management performance	Mean
Quality management system performance status/ Rating.	3.77
Quality management system effect on Perceived project quality	3.83

Source: Own Survey,2024

When respondents were asked to rate the project quality management system's performance (performance status/rating), the average performance rating for quality performance was (3.77), according to the mean value for quality performance. The extent to which project quality management influences project quality was another question posed to the respondents. The mean value of the perceived value of project quality in relation to project quality management was 3.83, above average, indicating that the respondents thought project quality management had an impact on project quality.

4.7. Inferential Analysis

Regarding objective three which deals with effects of project quality management practice on project success of the research inferential analysis, particularly correlation and regression has been done as elaborated below.

4.7.1. Correlation Analysis

A statistical technique called correlation analysis is used to determine whether or not two variables or datasets have a link and how strong that relationship might be. This means that, in order to determine whether there are any noteworthy relationships, patterns, or trends between the two, correlation analysis is used to analyze quantitative data obtained from research methods like surveys and polls. Accordingly, Table 4.16 below shows correlation coefficient of each

independent variable/factor, Quality Planning, Quality Assurance, Quality Control and Quality Improvement with the dependent variable Project Success.

Table 4.16 Correlation Analysis

Correlations						
		Quality Planning	**Quality Assurance**	**Quality Control**	**Quality Improvement**	**Project Success**
Quality Planning	**Pearson Correlation**	1	.332*	.187	.036	.395**
	Sig. (2-tailed)		.023	.209	.812	.006
	N	47	47	47	47	47
Quality Assurance	**Pearson Correlation**	.332*	1	.392**	.175	.389**
	Sig. (2-tailed)	.023		.006	.240	.007
	N	47	47	47	47	47
Quality Control	**Pearson Correlation**	.187	.392**	1	.690**	.385**
	Sig. (2-tailed)	.209	.006		.000	.007
	N	47	47	47	47	47
Quality Improvement	**Pearson Correlation**	.036	.175	.690**	1	.406**
	Sig. (2-tailed)	.812	.240	.000		.005
	N	47	47	47	47	47
Project Success	**Pearson Correlation**	.395**	.389**	.385**	.406**	1
	Sig. (2-tailed)	.006	.007	.007	.005	
	N	47	47	47	47	47

***. Correlation is significant at the 0.05 level (2-tailed).**

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

Source: Own Survey,2024

As depicted in table 4.16 above, Quality planning has significantly low positive correlation with Project success. Quality assurance has significantly low positive correlation with project success. Quality control also has significantly low positive correlation with project success. Quality improvement has significantly moderate positive correlation with project success.

By assessment of this data there is no correlation between two or more independent variables.

This result is in line with the findings of the research.

4.7.2. Regression Analysis

A statistical method known as multiple linear regression makes use of two or more independent variables to forecast the value of a dependent variable. Analysts can use this technique to find the model's variation as well as the relative contributions of each independent variable to the overall variance.

4.7.2.1 Regression Assumption Test

Linear regression analysis is based on the following set of assumptions:

Assumption of linearity. There is a linear relationship between dependent and independent variables.

Assumption of absence of co linearity or multi co linearity. There is no correlation between two or more independent variables.

Assumption of normal distribution. The data for the independent variables and dependent variable are normally distributed.

4.7.2.2. Linear regression Results

The output of the regression analysis for each dependent variable's testing model in the SPSS analysis is shown in the following table.

Table 4.17 Model Summary

Model Summary									
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Change Statistics**				
					R Square Change	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.594[a]	.031	.292	.624	.031	5.76	4	42	.001

a. Predictors: (Constant), Quality Improvement, Quality Planning, Quality Assurance, Quality Control

b. Dependent Variable: Project Success

Source: Own Survey,2024

We have an adjusted R square of .292, which indicates 29.2% of the variance of the dependent variable is explained by the independent variable.

Table 4.18 ANOVA

ANOVA						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	**Regression**	9.517	4	2.379	5.736	.001[b]
	Residual	17.419	42	.415		
	Total	26.936	46			

a. Dependent Variable: Project Success

b. Predictors: (Constant), Quality Improvement, Quality Planning, Quality Assurance, Quality Control

Source: Own Survey,2024

Analysis of variance indicates the results of the analysis are statistically significant and nothing is due to error.

Table 4.19 Level of implementation of selected independent variables

Coefficients				
	Unstandardized Coefficients		**Standardized Coefficients**	**Sig.**
	B	**Std. Error**	**Beta**	
Constant	0.701	0.761		0.362
Quality Planning	0.299	0.128	0.308	0.025
Quality Assurance	0.254	0.157	0.228	0.114
Quality Control	-0.011	0.161	-0.013	0.945
Quality Improvement	0.313	0.150	0.364	0.043

a. Dependent Variable: PS

Source: Own Survey,2024

For the chosen variables, regression analysis was used to provide additional insight; Table 13 shows the linear regression of selected independent variables and their level of implementation.

The regression analysis for quality planning tells us for every 1 unit of change in the project planning index, it will have unstandardized coefficient of 0.299 which means (0.299) change in project success variable. The significance value of quality planning is 0.025 which is statistically significant contribution on project success, this shows the increase value in having project success.

The regression analysis for quality assurance tells us for every 1 unit of change in quality assurance index, it will have unstandardized coefficient of 0.254 which means (0.254) change in project success variable. The significance value of quality assurance is 0.114 which is statistically insignificant contribution on project success and less impact on project success.

The regression analysis for quality control tells us for every 1 unit of increase in quality control index, it will have unstandardized coefficient of -0.011 which means (-0.011) change in project success variable. The significance value of quality control is 0.945 which is statistically insignificant contribution and a negative/low level of having project success.

The regression analysis for quality improvement tells us for every 1 unit of increase in the quality improvement index, it will have unstandardized coefficient of 0.313 which means (0.313) change in project success variable. The significance value of quality improvement is 0.043 which is statistically significant contribution on project success and is high impact to having project success.

So based on the information we can conclude all the independent variables apart from quality control in this case will have a positive impact on project success based on level of implementation. And we can conclude there is a linear relationship between dependent and independent variables.

Table 4.20 Normality Test

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Project Success	.260	47	.000	.799	47	.000

a. Lilliefors Significance Correction

Source: Own Survey,2024

By assessing the Shapiro wilk which has a statistically significant value which indicates the data for the independent variables and dependent variable are normally distributed.

The following results are from the structured interview guide were used to confirm the quantitative results with the qualitative data and to gain a deeper understanding of the challenges and practices of project quality management at the mega construction office in Addis Ababa for the Kolfe Agriculture Market Center:

The respondents were graduate and undergraduate with 6 years and above experience which of whom 2 were managers of the operation situated at their office in arat kilo office and 1of which was frequently at the construction site in kolfe in a temporary office on the site itself. When questioned about the formal implementation of quality management and the difficulties encountered, the managers and site inspectors agreed that the presence of other large-scale projects and the city administration's desire to complete the projects quickly and effectively took a toll on their staff. They also mentioned that the lack of resources made things challenging at times, but they were still able to complete the project on schedule. the national standard called Ethiopian Building Code Standard was implemented. The management believed that quality was a tool that could be used to increase defects, enhance project quality, and complete the project within the allotted time, scope, and budget. The budget allocation was also deemed remarkable according to Ato Behailu one of the site managers and coordinator, “there was no loss recorded to the finance office which showed the integrity of the engineers and site managers.”

When asked why there were shortages of resources and why employees were not trained in quality management, respondents said that government agencies handle construction projects primarily and that delays in paying contractors contributed to the scarcity of resources. This also affected the employees' training in quality management best practices. However, respondents also pointed out that employees involved in the quality management system have experience in engineering and construction, and they were taught the fundamentals of the system's necessity during their formal education. The respondents noted that every step of the progress made was monitored by a team who worked alongside the site managers and reported to the head of the project on a weekly basis along with other projects overseen by the firm.

When asked about the difficulties in implementing project quality management, respondents indicated that there were many contract workers who need ongoing compensation and that the

majority of payment-related disputes were resolved through meetings between the client and the contractors. The respondents also mentioned that the top manager could compromise the project's quality by enforcing differences in the implementation of certain policies and altering the materials to be used due to schedule constraints. Ultimately, this proved advantageous as the project was completed six months ahead of schedule, but there was occasionally a lack of information about quality management among project participants.

When asked about their perception of project success, respondents were quick to point out that it depends on the satisfaction of the stakeholder and anything unsatisfying will not be delivered and for the determinants they mentioned the manner in which all the employees participate in their field will dictate it and monitoring their work and giving critique surely makes the success even more attainable.

The finding showed that there was a moderately stronger system for quality management practice and controlling mechanisms; even though there was the power of individuals over the system.

The completion, quality standard, budget and scope were all as planned and to the satisfaction of the city administration in the speech made by the mayor of Addis Ababa and the head of the project engineer Debo.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

INTRODUCTION

This chapter seeks to give summary of the findings, conclusion and recommendations based on the analysis of data.

5.1. Summary of findings

The main purpose of this paper was to study the project quality management practice and challenges and its effect on project success in the case of kolfe agriculture market center during and after the completion of the project, and also to asses project quality management practices of Addis Ababa mega projects construction office, to examine project success of the kolfe agriculture market center and to explain effects of project quality management practice on project success of kolfe agriculture market center. This study used a descriptive and explanatory research design, census survey was used to collect data. A total of 47 respondents participated and all of them responded fully to the questionnaire survey. For the interview part of the survey 2 top level managers and part of the quality managing team has participated. In which all of whom echoed the same answer.

The success of the kolfe agricultural market center project has been recognized by the mayor and the overseeing committee which represented the stakeholders to having to exceed their expectation as the project was delivered and open on November.5 2023 6 months prior the expected date.

The analysis for project quality management practices revealed the following mean results for, quality plans are prepared before starting job (4.17), quality plan is communicated to all project team (4.15), quality assurance activities are implemented regularly (4.17), quality control activities are implemented regularly (4.09), quality improvement activities are implemented regularly (4.11), system for quality control (4.04), system for quality improvement (4.02), for quality planning procedures (4.09), quality improvement procedures (4.04), which are all the means with high perceptions from employees which indicate high level of implementation in

regards to most of the quality management practices. However quality policies are agreed upon by decision makers (3.98), the quality improvement coordinating body (4.00), quality improvement tools and techniques (3.91), company practices and continuous improvement (3.96), for quality planning (3.83), employees are well equipped and required human resource are (4.00) and (3.87) respectively show there is a low and average level of implementation and perception from the employees. With respect to this information, we can decide the project quality management practices of the Addis Ababa mega projects constructions office is excellent even though it's lacking in some departments. There were also challenges faced in implementing quality management, The analysis of quality management challenges revealed the mean results as which are; lack of continuous supervision (3.96), financial constraints (3.96), communication (3.98) are the activities with the highest mean and in which the employees have high perception towards to and coordination with supplier (3.87) as well as lack of management support (3.81) are activities with low perception seen as less challenging in quality management. Which indicates there was a high coordination with supplier and high management support both of which essential to have project success. However, lack of supervision, finance and communication were found challenging by the employees which indicates weakness in managements and stakeholder low level engagement with the employees as well as the supervisor's inefficiency which are all detrimental to having a project success. The researcher suggests quality policies, the quality improvement coordinating body, quality improvement tools and techniques, company practices and continuous improvement for system for quality planning and required human resource are given more consideration and also employees should be well equipped to tackle both technical and mental challenges they face and in order to do that there should be training programs, seminars to increase the knowledge and perception of employees as well as better coordination with management to have the best outcome in project success.

For the effect of selected variables on project success, the mean value of project quality management effect on the project budget (3.77) was medium in terms in its application but lower compared to the other variables of quality management effect on stakeholder satisfaction (3.94), quality management effect on project scope (3.81), quality management effect on project schedule (3.94), which indicated that project quality management has the least effect on project success in this case.

In the case of implementing QP, QA, QC, and QI the result showed, Quality planning was implemented (4.06), planning effect stakeholder satisfaction (4.11) had the highest mean which indicates to be the highest level implementation and effect on PS, quality planning effect project scope(3.64), quality planning effect project schedule (3.89), quality planning effect on project budget with a mean of (3.85), quality assurance was implemented (4.02), quality assurance effect on stakeholder satisfaction (4.04) is high in its implementation and effect on PS, quality assurance effect on project scope (3.87) has a medium effect on PS and its implementation as well, with quality assurance effect on project schedule (3.57) which is medium but to have the least effect on project success, quality assurance effect on project budget (3.98), Quality control was implemented (4.11) which shows the other a highest implementation and effect on PS, quality control effect on stakeholder satisfaction (3.87), quality control effect on project scope (3.83) medium implementation and effect on PS , quality control effect on project schedule (3.87), quality control effect on project budget (4.09) also has a high in implementation and effect on project success, Quality improvement was implemented (4.06), quality improvement effect on stakeholder satisfaction (3.98), also quality improvement effect on project scope (3.72) to be the other independent variable to have the least level effect on project success and medium implementation, quality improvement effect on project schedule (3.81), quality improvement effect on project budget (3.96).

5.2. Conclusion

In conclusion, the quality management system (QMS) is defined by ISO 9001 (2015) as a collection of rules, guidelines, and practices necessary for organizing and carrying out (production, development, and service) in an organization's primary business areas (i.e., areas that can affect the organization's capacity to satisfy customer requirements). The goal of this study was to evaluate the relationship between the various quality management practices' basic processes, implementation problems, and effects on project success. Project success is "measured against the overall objectives of the project," according to De Wit (1988), if a project doesn’t meet the overall objectives set, we can’t consider that project successful. The following conclusions are derived from the literature review and examination of the respondents' responses:

The project quality management process results showed that the quality management system and procedures for quality planning, controlling, and improvement were highly implemented. The core processes of project quality management, namely planning, controlling, assurance, and continuous improvement, were also highly implemented. On the other hand quality management practices having required human resources, continuous improvement, quality planning, policies agreed upon by decision makers, quality improvement tools and techniques and quality improvement coordinating body were low and can be enhanced by emphasizing staff retention more, enhancing top-down communication, creating more precise policies, providing more resources for the coordinating body, and providing the quality management team with better tools and methods. The results also showed that despite the use of certain quality management procedures; there was lack of continuous supervision, financial constraints and low level of communication. The researcher also observed there were seminars and meetings of concerned bodies to recover from these constraints with monthly reports provided by site managers and the finance office.

According to the findings, most respondents defined quality as the elimination of flaws which determines that shortcomings faced when doing the project were dealt with by implementation of various quality management tools and techniques. most of the participants understood that it was due to competition pressure as factors motivational to start quality management and all the respondents of the survey agreed upon using quality management system unanimously. quality management effect on stakeholder satisfaction and quality management effect on project schedule were showen to have the highest amount in contrast to quality management effect on the project budget and quality management effect on project scope, which indicates the variables in which project success is defined by (project schedule and stakeholder satisfaction) are more affected which in turn points out that the project success of kolfe agricultural market center was highly reliable on it. The results also demonstrated that the study's quality management practitioners agreed with the effects and that applying project quality management procedures in conjunction with excellent planning, quality assurance, control, and improvement would have a great impact on the project success. However, according to the data gathered in this study quality assurance and quality planning were perceived to have the lower effect on project success, which is in contrast but it actually has an effect on the project success.

5.3. Recommendations

The study's conclusions led to the development of the following recommendations for the Addis Ababa Mega Project Construction Office, aimed at enhancing quality management at the Kolfe Agricultural Market Center and maybe other projects the office does in the future;

The results of the empirical research demonstrate that resource shortages and budgetary restrictions were present when the Kolfe Agricultural Market Center project was being implemented. As a result, it is advised that resource management be given more thought at every stage of the project lifecycle, with employees having access to the tools they need to handle quality management issues and the trained labor needed for each activity.

The results indicate that, despite the deployment of quality management improvement activities throughout the project implementation phase, there was a lack of continual improvement in the quality management practices across all processes. Consequently, the organization is recommended to use continuous improvement in all of its operations, apply quality improvement tools and procedures like check sheets and control charts, and establish a body responsible for overseeing quality improvement (such as a quality steering committee).

The research reveals that there was insufficient planning for the budget and resources; therefore, the company is advised to conduct stringent resource and budget control during the project's implementation. Along with raising employee awareness of their role in achieving quality goals, it is suggested that project quality management implementers receive training in quality management, and that they seek advice from consultants experienced in managing similar projects.

It is advised to establish more robust cooperation with the supplier and open communication of information with accountable quality management implementers. even if it's not currently considered significant.

The results of the assessment indicate that quality assurance, planning, and improvement were not as well implemented as they could have been, despite the belief that they would affect the quality management performance. The analysis indicates that each variable contributed to the

success of the project and the quality management performance. Therefore, it is advised that regular planning be done, that each project participant be made aware of their contribution so that they will be committed to the project and contribute, and that employees receive the necessary training, such as quality management practice training, to improve the performance of quality management.

The results demonstrated that there was a lack of a strong system for regulating quality management practices and that individuals held power over the system. As a result, it is advised to develop accountability in every area to control upper management and higher officials' decision-making when it could result in lower-quality output.

In order to strengthen the bonds between cross-functional teams, it is advised that the section establish a better platform that can be used by other sections to build quality circles and reorganize a process improvement team. This will present a chance to enhance quality assurance, grow the role of the staff, and develop the self-managed team.

Generally speaking, the goal of construction offices like the Addis Ababa Mega Projects Constructions Office is to deliver final goods that are dependable and of excellent quality. Employees and managers must collaborate in order to close gaps that arise before achieving project success if the organization is to meet its goals.

5.4. Implication for further research

Although the sample size and depth of the research may not have been as large as they should have been, project managers' methods and skills may have improved with time, and this study was conducted using the resources that were readily available to the researcher.in the case of the Kolfe Agriculture Market Center project, various information about the practices and difficulties of project quality management and their impact on project success has been identified in this study. Nevertheless, additional research is necessary to gain a deeper understanding of the other factors that influence project quality management performance, as well as project quality, its difficulties and success. Furthermore, more research is needed to determine how various kinds of commercial and industrial building projects handle quality control.

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APPENDICES

APPENDIX A: QUESTIONNAIRE

ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

TITLE OF THE THESIS: Project quality management practices & challenges & it's effects on project success: the case of kolfe agricultural market center.

Name: Yared Beyene

Phone no: 0991150293

Dear respondent,

Introduction: I appreciate your willingness to be a respondent in this survey. The purpose of this questionnaire is to gather information for the Master of Project Management partial fulfillment. The researcher guarantees that the data you submit will only be used for legitimate academic study, and that the respondent's anonymity will be preserved at all times. I appreciate your cooperation.

SECTION A: GENERAL INFORMATION

1. **Educational background**

a) Graduate (MSC) ☐
b) Undergraduate (BSC) ☐
c) Diploma ☐
d) Highschool ☐

If other, please specify ----------

2. **Gender**

a) Male ☐
b) Female ☐

3. **What's your position of work?**

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4. **What's your experience in your line of work?**

a) 0-5 years ☐
b) 6-10 years ☐
c) 11-25 years ☐
d) Above 25 years ☐

If other, specify ----------

5. **Do you implement a formal quality management system on your projects or in your organization?**
   a) Yes ☐
   b) No ☐

If other, please specify ----------
---

6. **If yes, how long have you implemented this system?**

a) 0-5 years ☐
b) 6-10 years ☐
c) Above 10 years ☐

If other, please specify ----------

7. **If no, why?**

a) Lack of knowledge on its implementation ☐
b) The implementation of a formal quality management system is expensive ☐
c) The company has thrived without such a system in place ☐

If other specify

8. **Which of the following factors provided the motivation to start the Quality Management?**

a) Pressure from competitors ☐
b) Demanding customers ☐
c) Your Company's Chief Executive/Manager ☐
d) Need to reduce costs and improve performance ☐
e) International standards ☐

If other, please specify ----------

9. **What is your perception of quality?**

a) Elimination of defects ☐
b) A tool to increase profits ☐
c) A competitive advantage ☐

If other please specify ----------

SECTION B: QUALITY MANAGEMENT PRACTICES

In your experience, please indicate the quality management practices which cut across the quality management emphases of technical and process aspects of the kolfe agriculture market center Construction Project by ticking the appropriate boxes. The following statements are issues related to implementation of project quality management. Please Mark the Appropriate Answer by (√), Using the key (**Where: 1= Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree**)

No	**Practices of Project Quality Management**	**Degree of Agreement**				
P1	**Quality Management Processes**	**1**	**2**	**3**	**4**	**5**
1	Quality Plan are prepared before starting the Job.					
2	Quality Plan is communicated to all project team.					
3	Quality assurance activities are implemented regularly.					
4	Quality Control activities are implemented regularly.					
5	Quality improvement activities are implemented regularly.					
6	Quality polices are agreed upon by decision makers.					
P2	**Continuous Improvement**	X	X	X	X	X
1	There is a quality improvement coordinating body (e.g. quality steering committee).					
2	Quality improvement tools and techniques are widely used					
3	The company practices continuous improvement in all of its processes.					
P3	**Systems & procedures**	X	X	X	X	X
1	There is a system for quality planning.					
2	There is a system for quality control.					
3	There is a system for quality improvement					
4	Quality planning procedures are implemented.					
5	Quality improvement procedures are implemented.					
P4	**Resource Management**	X	X	X	X	X

1	Employees are well equipped to tackle problems.					
2	Required human resource is available for the project.					

SECTION C: QUALITY MANAGEMENT CHALLENGES

What are the main challenges and obstacles of quality management in the project in your opinion? Please Mark the Appropriate Answer by (√), Using the key (Where**: 1= Very Low, 2 = Low, 3 = Medium, 4 = High, 5 = Very High**)

	Challenges of project quality management system	**Degree of agreement**				
No	**Quality Management Challenges**	**1**	**2**	**3**	**4**	**5**
1	Lack of continuous supervision					
2	Financial constraints					
3	Communication					
4	coordination with supplier.					
5	Lack of management support					

SECTION D: PROJECT QUALITY MANAGEMENT RATING AND PERCEIVED PROJECT QUALITY

The following statements are issues related to project quality management system performance rating and Perceived project quality. Please Mark the Appropriate Answer by (√), Using the key (Where**: 1= Very Low, 2 = Low, 3 = Medium, 4 = High, 5 = Very High**)

	Project Quality Management Rating and Perceived project quality	**Degree of agreement**				
No	**Quality management Rating**	**1**	**2**	**3**	**4**	**5**
1	Quality management system performance status/ Rating.					
2	How much does project quality management system affect project quality (Perceived project quality)					

SECTION E: SELECTED VARIABLES ON PROJECT SUCCESS

The following statements are issues related to the implementation of selected variables on project quality management system. Please Mark the Appropriate Answer by (√), Using the key (Where: **1= Very Low, 2 = Low, 3 = Medium, 4 = High, 5 = Very High**)

	Selected Variables on The Project success	**Degree of agreement**				
No	**Dependent Variables on PS**	**1**	**2**	**3**	**4**	**5**
1	How much does quality management affect stakeholder satisfaction					
2	How much does quality management affect project scope					
3	How much does quality management affect project schedule					
4	How much does project quality management affect project budget					

SECTION F: INDEPENDENT VARIABLES ON PROJECT SUCCESS

The following statements are issues related to the implementation of selected independent variables on project quality management system. Please Mark the Appropriate Answer by (√), Using the key (Where: **1= Very Low, 2 = Low, 3 = Medium, 4 = High, 5 = Very High**)

No	**Independent Variables on Project Success**	**Degree of agreement**				
P1	**Quality Planning**	**1**	**2**	**3**	**4**	**5**
1	Quality planning was implemented					
2	How much does quality planning affect stakeholder satisfaction					
3	How much does quality planning affect project scope					
4	How much does quality planning affect project schedule					
5	How much does quality planning affect project budget					
P2	**Quality Assurance**	X	X	X	X	X
1	Quality assurance was implemented					
2	How much does quality assurance affect stakeholder satisfaction					
3	How much does quality assurance affect project scope					
4	How much does quality assurance affect project schedule					
5	How much does quality assurance affect project budget					
P3	**Quality Control**	X	X	X	X	X
1	Quality control was implemented					
2	How much does quality control affect stakeholder satisfaction					
3	How much does quality control affect project scope					
4	How much does quality control affect project schedule					
5	How much does quality control affect project budget					
P4	**Quality Improvement**	X	X	X	X	X

1	Quality improvement was implemented					
2	How much does quality improvement affect stakeholder satisfaction					
3	How much does quality improvement affect project scope					
4	How much does quality improvement affect project schedule					
5	How much does quality improvement affect project budget					

APPENDIX B: KEY INFORMANT INTERVIEW GUIDE

ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

TITLE OF THE THESIS: Project quality management practices & challenges & it's effects on project success: the case of kolfe agricultural market center.

Dear respondent,

Introduction: I appreciate your willingness to be a respondent in this survey. The purpose of this questionnaire is to gather information for the Master of Project Management partial fulfillment. The researcher guarantees that the data you submit will only be used for legitimate academic study, and that the respondent's anonymity will be preserved at all times. I appreciate your cooperation.

1. What is your position in the selected project?
2. Educational background?
3. What are your years of experience in this field?
4. How do you implement a formal quality management system on your projects or in your organization?
5. What is your perception of quality?
6. Why there is resources shortage for implementation of Quality Management practices?
7. What effects have you encountered of quality management on project success?
8. What's are your parameters in measuring project success?
9. What are the challenges during the implementation of quality management?
10. What's your perception of project success?
11. The project was completed on time?
12. Project was completed according to planned budget.
13. The project meets the required scope and quality standards.
14. The project delivered on time for the purpose.
15. All the projects implemented achieved set quality standards.

APPENDIX C: RELIABILITY TEST RESULTS

Scale: ALL VARIABLES

Reliability model for Quality management practices

Case processing summary

		N	%
Cases	Valid	47	100.0
	Excluded[a]	0	.0
	Total	47	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
0.850	16

Item-Total Statistics

QM PRACTICES	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
B1	60.26	54.020	0.289	0.852
B2	60.28	53.987	0.406	0.844
B3	60.26	55.368	0.323	0.848
B4	60.34	52.403	0.620	0.836
B5	60.32	53.700	0.335	0.849
B6	60.45	50.122	0.567	0.836
B7	60.43	50.119	0.649	0.832
B8	60.51	52.994	0.383	0.846
B9	60.47	51.124	0.606	0.834
B10	60.60	49.898	0.684	0.830
B11	60.38	53.241	0.362	0.847

B12	60.40	53.377	0.475	0.841
B13	60.34	51.577	0.674	0.833
B14	60.38	52.154	0.478	0.841
B15	60.43	50.163	0.588	0.835
B16	60.55	54.209	0.246	0.855

Reliability model for Quality management challenges

Case Processing Summary

		N	%
Cases	Valid	47	100.0
	Excluded[a]	0	.0
	Total	47	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
0.759	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
C1	15.62	8.459	0.482	0.732
C2	15.62	8.285	0.554	0.706
C3	15.60	8.246	0.592	0.692
C4	15.70	8.475	0.541	0.711
C5	15.77	8.835	0.467	0.736

Reliability model for Project quality management rating and perceived project quality

Case Processing Summary			
		N	%
Cases	Valid	47	100.0
	Excluded[a]	0	.0
	Total	47	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
0.777	2

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
D1	3.83	0.796	0.637	-
D2	3.77	0.922	0.637	-

Reliability model for selected variables/Dependent variables on PS

Case Processing Summary			
		N	%
Cases	Valid	47	100.0
	Excluded[a]	0	.0
	Total	47	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
0.767	4

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
E1	11.51	6.168	0.519	0.736
E2	11.64	5.192	0.726	0.621
E3	11.51	6.386	0.467	0.762
E4	11.68	5.744	0.567	0.711

Reliability model for independent variables on PS

Case Processing Summary

		N	%
Cases	Valid	47	100.0
	Excluded[a]	0	.0
	Total	47	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
0.902	20

Item-Total Statistics

INDEPENDENT VARIABLES	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
F1	74.28	129.683	0.389	0.901
F2	74.23	129.661	0.355	0.902
F3	74.70	121.257	0.656	0.894
F4	74.45	123.687	0.621	0.896
F5	74.49	124.951	0.521	0.898
F6	74.32	124.961	0.587	0.897
F7	74.30	121.301	0.646	0.895
F8	74.47	122.515	0.655	0.895
F9	74.77	122.444	0.562	0.897
F10	74.36	130.845	0.260	0.905

F11	74.23	131.444	0.276	0.904
F12	74.47	124.124	0.627	0.896
F13	74.51	120.734	0.653	0.894
F14	74.47	120.733	0.691	0.893
F15	74.26	124.281	0.615	0.896
F16	74.28	130.335	0.342	0.902
F17	74.36	125.366	0.550	0.897
F18	74.62	119.894	0.745	0.892
F19	74.53	125.994	0.444	0.900
F20	74.38	127.328	0.435	0.900