College of Business and Economics
School of Commerce

ASSESSMENT OF MONITORING AND CONTROL PRACTICES OF HOUSING PROJECT IN ADDIS ABABA,

The Case of Koye Feche Housing Project

By: Mamo Methe
Advisor: Zegeye Muluye (PhD)

June 2024

Addis Ababa University
College of Business and Economics
School of Commerce

ASSESSMENT OF MONITORING AND CONTROL PRACTICES OF HOUSING PROJECT IN ADDIS ABABA,

The Case of Koye Feche Housing Project

A thesis submitted to the School of Commerce presented in partial fulfillment of the requirement for the degree of Masters of Arts in Project Management.

By: Mamo Methe
Stream: Project Management
Advisor: Dr. Zegeye Muluye

June, 2024

Statement of Declaration

I, Mamo Methe, hereby declare that the thesis I have submitted to the Addis Ababa University Department of Project Management on the topic "Assessment of Monitoring and Controlling Practices in Housing Project in Addis Ababa: the case of Koye Feche site" is entirely original and has not been submitted for the award of any other degree, diploma, or title similar to any other university or institution. I have also duly acknowledged the sources of materials used in the thesis.

Declared by: Mamo Methe

Signature: ----------

Date: ----------

Confirmed by: Dr. Zegeye Muluye

Signature: ----------

Date: ----------

Approved by the Members of the Examination Board

1.	Dr. Seifu Bekuretsion External Examiner	Signature	23/07/2024 Date
2.	Dr. Sisay Debebe Internal Examiner	Signature	ሐምሌ 17, 2024 Date
3.	Dr. Zegeye Muluye Advisor	Signature	ሐምሌ 08/2024 Date
4.	Chairperson of Department (Department coordinator)	Signature	Aug 07, 2024 Date

Acknowledgement

First and foremost, I would like to thank almighty God for giving me the persistence to complete this study.

I would like to express my sincere gratitude to Zegeye Muluye (PhD), my thesis adviser, for his steadfast leadership, knowledge, and support during this academic journey. His guidance has greatly influenced this effort and assisted me in reaching my objectives.

I am also appreciative of the professors and instructors who have helped me finish this thesis by imparting knowledge and useful skills. My academic progress has been greatly aided by their commitment to both research and teaching.

I want to express my gratitude to my family for their love and support; they have been my pillar of strength during this difficult yet gratifying experience. Their unfailing support and empathy have given me the willpower to endure and get through challenging moments.

I would like to express my heartfelt gratitude to all those who have contributed to the successful completion of this thesis. Particularly, my friends, who have consistently provided encouragement and support. This scholastic journey has been more pleasurable and unforgettable because of their friendship and camaraderie.

In addition, I would like to express my gratitude to the contractors, consultants, and client housing development project offices at Koye Feche sites for their invaluable insights, information, and materials that have been essential to finishing this thesis. Their collaboration and openness to sharing their expertise have been crucial to this project's success.

Table of Contents

List of tables

Acronyms

BIM	Building Information Modeling
EEA	Ethiopian Economic Associations
EBCS	Ethiopian Building Code Standard
EVA	Earned Value Analysis
IHDP	Integrated Housing Development Program
KPIs	Key Performance Indicators
MWUD	Ministry of Works and Urban Development
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
QC	Quality Control
RII	Relative Important Index
UNECE	United Nations Economic Commission for Europe
UN-HABITAT	United Nations Human Settlements Program

Abstract

This research aimed to assess the monitoring and controlling practices within housing projects in Addis Ababa, Ethiopia, focusing on the Koye Feche Akaki site. The study focuses on 20/80 condominium integrated housing development programs (IHDPs) at the site. Drawing on existing literature, conceptual frameworks were developed to guide the research design and approach. Conceptual frameworks were created to direct the research design and methodology by drawing on previously published material. A questionnaire survey, document analysis, and a study of relevant literature were used to collect and analyze the data. With the use of a quantitative research methodology and descriptive analysis, the study examined the shortcomings, restrictions, and difficulties that were present in the practices of monitoring and controlling within these housing developments. The findings revealed several critical areas that required attention, such as inadequate quality control methods, monitoring procedures, resource scarcity, technological issues, and communication failures. Additionally, the study identified specific shortcomings in the existing procedures, such as the need for advanced monitoring tools, comprehensive quality control systems, and effective lines of communication. The challenges revealed included resistance to change, a lack of skilled personnel, insufficient data collection and reporting, and issues with regulatory compliance. Enhancing resource allocation, stakeholder communication, data gathering, quality control procedures, flexibility, creativity, and regulatory compliance are all recommended by this research.

***Key Terms**: Monitoring and controlling practices, Housing project, Challenges*

CHAPTER ONE

1. INTRODUCTION

1.1. BACKGROUND OF THE STUDY

The population of the world has expanded significantly in the past hundred years, rising from 1.6 billion in 1900 to over 7.9 billion at present (United Nations, 2018). This swift growth in population, along with the growth in urbanization and industrialization, is exerting immense pressure on global resources and the environment. As a result of more individuals moving to cities and participating in industrial activities, the demand for resources such as housing, food, water, energy, and others is soaring.

Population growth and human activity are causing deforestation, biodiversity loss, soil degradation, water scarcity, and greenhouse gas emissions, leading to climate change. Industrial processes, fossil fuel burning, plastic waste, and overfishing contribute to environmental degradation (Rwamasirabo et al., 1991).

Nowadays, most people on the planet reside in cities, which are expanding quickly, particularly in emerging nations. Slums, poor housing, and informal settlements are proliferating as a result of this fast urbanization. Many urban dwellers do not have access to essential utilities like as power, clean water, sanitary facilities, or medical care. Because there is a shortage of affordable housing, people with lesser incomes must live in dangerously crowded apartments (Habitat for Humanity, 2021).

The housing problem in the global South is exacerbated by the expansion of informal or inadequate settlements, the emphasis placed on property ownership, and unsuitable policies and regulations that force the impoverished out of cities (WRI, 2017).

Ethiopia's capital, Addis Ababa, has encountered numerous housing issues as a result

of the country's quick urbanization and growing population. Addis Ababa, one of Africa's fastest-growing cities, is experiencing an enormous burden on its housing infrastructure as a result of a migration movement from rural areas in search of better possibilities. Inadequate living conditions and resulting housing shortages underscore the urgent demand for broad efforts to address the housing issue in the city.

The accelerating growing population of Addis Ababa increases the city's affordability issues. According to the report, the demand for affordable housing considerably exceeds the supply, particularly given that there are currently more than four million people living in the country and that urban migration is expected to continue. Present-day housing supply has been severely limited by this population boom, resulting in overcrowding, informal settlements, and poor living conditions (UN-HABITAT (2010).

Various projects have been started by governmental and non-governmental bodies to improve housing conditions in Addis Ababa in response to the growing housing crisis. In an effort to support affordable housing and sustainable urban growth, these initiatives involve building new housing developments, renovating already-existing buildings, and putting policy measures into place. Notwithstanding these endeavors, noteworthy obstacles endure, hence requiring inventive methodologies to effectively address the intricate housing predicaments.

Integrated housing development projects strive to establish thriving, welcoming communities where people may access basic services and possibilities for socioeconomic growth in addition to decent housing. Integrated housing development projects have become a viable solution to the complex housing difficulties in Addis Ababa by combining vital elements including social services, community involvement, infrastructural development, and environmental sustainability (Anthony Laville, 2022).

Poor project management techniques can lead to delays and cost overruns in construction projects. Efficient project scheduling and planning are crucial for improving performance. Research on the construction industry, robotics, and real estate projects highlights the importance of effective monitoring and control procedures. The Project Management Process Maturity Model and Analytic Hierarchy Process emphasize the need for continuous improvement in project management. Studies on Ethiopia's public housing organizations and Addis Ababa housing projects highlight the importance of strong monitoring and control procedures for on-time delivery, financial viability, and satisfactory outcomes. Continuous improvement and team commitment are essential for project success (Kwak and Ibbs, 2002).

A shift towards more entire and sustainable housing solutions is seen in the various integrated housing development projects that have been started in Addis Ababa in recent years. Prioritizing quality, affordability, and inclusivity, these projects seek to satisfy the varied demands of the city's growing population while encouraging community unity and preservation of the environment.

The Koye Feche 20/80 housing project site is located in Oromia, Shagar sub city (formerly the South-Eastern part of Addis Ababa city in Akaki Kality sub-city of District 09). The project site covers approximately 1019 hectares and is primarily used for farmland and grazing, with few residential houses nearby. The topography of the area is characterized by gentle and relatively flat topography

The area has a climate with a mean annual temperature of 20.33°C and a mean annual relative humidity of 212%. It is drained by seasonal streams and has a high variability in total rainfall. The ecosystem services in the area include provisioning services, regulatory services, and cultural services (NMSA, 2024).

Geology and soil type are important factors in the building of the Koye Feche housing

project site. Because of their durability and capacity to drain water, sandy soils are good for foundations, but clay soils are very compressible and can lead to structural instability. In order to assure the stability and longevity of the housing project, it is imperative to plan the foundation design, construction methods, and materials utilizing an understanding of the soil type and geology. To design, build, and maintain foundations that can withstand the unique challenges presented by the site's soil conditions, engineers and contractors must thoroughly assess the properties of the soil throughout the planning process (Kim, 2021).

The Koye Feche housing project site in Addis Ababa, Ethiopia, is primarily used for farmland and grazing, with few residential houses nearby (Asefa Dwgife, Fikirte Demissie, 2018). The site is part of the Ethiopian government's 20/80 scheme, which aims to build thousands of condominium units in Koye Feche. However, As it is reported by different studies, the project has experienced delays due to various factors, including low quality materials, poor pre-planning, ineffective monitoring activities, late delivery of construction materials, shortage of construction materials, low skill of laborers on construction sites, late procurement of resources, late revision and approval of design documents, poor communication and coordination of project parties, poor qualification of contractors and technical staff, lack of effective planning and scheduling of projects, clear and inadequate drawing by consultants or inadequate experience of consultants, and political influence related to master plans (Lydiya, 2022; Yesim Dereje, 2020; Guesh Dejen, 2017).

Monitoring and control practices in construction projects are crucial for successful outcomes. Techniques like automated monitoring technologies and construction-specific software streamline processes and provide real-time insights. Automation and real-time data collection improve accuracy and efficiency, enabling proactive issue

identification and resolution. Technologies like Building Information Modeling (BIM), drones, and sensors are increasingly used for progress monitoring, compliance verification, and safety management (Tao Cheng & ochen Teizer, 2010).

1.2. STATEMENT OF THE PROBLEM

The demand for housing is greatly impacted by population expansion, which drives up prices. A Chinese study found that there is a 1.4 percentage point increase in property price increases for every percentage point increase in population. While other factors including unemployment, GDP per capita, mortgage rates, and housing supply all affect prices, stable population growth is advised in urban China to reduce housing price growth and foster economic stability (He Li, Xiaoxuan Liang, 2021).

Studies carried out by United nations Economic commission for Europe in UNECE countries on measuring population and housing in 2010 shows that housing supply and population growth are correlated, with housing supply influencing options for immigration and the creation of new households. Sufficient housing supply has the power to attract in immigrants, affect residential preferences, and affect when fertility occurs and how many children a person has. The availability of a varied supply of housing, comprising reasonably priced rental properties, is necessary in order to facilitate young individuals' entry into the housing market and encourage the establishment of families (UNECE, 2010). Population growth has a significant impact on the demand for housing, affecting housing prices and market dynamics. Understanding the intricate relationship between population growth and housing demand is essential for policymakers and urban planners to ensure sustainable housing development in response to demographic changes.

Addis Ababa, the capital city of Ethiopia, is rapidly becoming more urbanized and

populous, which is driving up housing demand. The rapid urbanization has strained the city's housing infrastructure, resulting in overcrowding, informal settlements, and inadequate living conditions for many residents. In order to build inclusive, sustainable communities, housing is essential to both community and individual well-being. This emphasizes the need for integrated research and sustainability indicators. Affordable housing for low- and mid-income households is successfully promoted by the Integrated Housing Development Program in Addis Ababa, Addis Ababa City Government 2008 (MOWUD, 2008).

In spite of the governmental and private sectors' best efforts, delays, overspending, and subpar construction continue to be issues in Addis Ababa's housing demand. This Lidiya research assesses the schedule-delaying elements and how they affect the Koye Feche 20/80 condominium project. A number of factors, such as subpar construction methods, a disdain for building codes, and inappropriate resource utilization, all have a major role in these problems and can have an impact on the cost and quality of housing (Lidiya Tibebu, 2022). (Lidiya Tibebu, 2022). The study investigates the factors causing time overruns in building construction projects in Addis Ababa, focusing on the Koye Feche Akaki site. Key contributors include material shortages, financial difficulties, inadequate planning, payment delays, and design and approval delays. The research aims to provide construction professionals with insights to prevent or correct delays and enhance industry knowledge.

Yesem is conducting a study to increase industry knowledge of the construction sector and offer insights to address delays. The study focuses on important problems such as shortages of materials, financial difficulties, inadequate planning, late payments, and delays in design approval (Yesem Dereje, 2020). According to another study, delays in the Koye Feche condo project have affected a number of stakeholders and impeded

Addis Ababa's timely housing development (Guesh Dejen, 2017). Inadequate monitoring and control processes in housing projects in the city pose challenges. Effective monitoring and control are crucial for meeting quality standards, adhering to plans, avoiding cost overruns, and completing projects successfully. Evaluating and improving monitoring and control procedures is vital for enhancing housing project outcomes in Addis Ababa.

Ensuring project success, quality, and regulatory compliance during the housing project execution phase requires evaluating monitoring and control techniques. Safe, sustainable housing solutions that satisfy the expanding needs of Addis Ababa's population can be achieved through efficient monitoring and management, which can also assist reduce hazards and increase efficiency (PMBOK 6, 2017).

The purpose of this study is to evaluate the execution phase monitoring and control procedures of 20/80 condo dwelling projects at the Koye Feche site.

1.3. RESEARCH OBJECTIVE

The general objective of the research is to assess monitoring and control practices during the execution phase focusing on 20/80 condominium projects.

The specific objectives of the research are:

- To identify the key monitoring and control practices employed in housing projects at Koye Feche project site.
- To evaluate the effectiveness of these practices in ensuring project success.
- To identify challenges and constraints faced by project stakeholders in implementing effective monitoring and control practices.

1.4. RESEARCH QUESTIONS

This study will try to achieve its objectives by answering the following questions:

- What are the existing monitoring and control practices in Addis Ababa's housing projects?
- How effective are these practices in ensuring the success of housing projects?
- What are the major challenges faced in implementing monitoring and control mechanisms?

1.5. SIGNIFICANCE OF THE STUDY

Successful completion of projects imply completion of construction works with planned cost,

time and quality. Monitoring and controlling of a project in execution phase is significantly imperative for successful completion of the project by helping in remedial measures, and fast decision making. Generally, the significant of the research is described below:

- It provides insights into the current state of monitoring and control practices in housing projects in Addis Ababa, helping to identify areas for improvement.
- The findings of the study can inform policymakers, government agencies, developers, and other stakeholders about the challenges and opportunities in enhancing project oversight.
- Recommendations derived from the study can inform future housing initiatives, leading to more efficient and successful project implementation.

1.6. THE SCOPE OF THE STUDY

The study's main concentration will be on the monitoring and control practices used during the 20/80 condominium Integrated Housing Development Programs (IHDP) construction phases at the Koye Feche 2 site in Addis Abeba. The particular site has

been identified to be the most troublesome and has encountered difficulties finishing the project. Data collection will mostly consist of project paperwork, stakeholder interviews, and site observations from five project offices (Projects 11, 12, 16, 17, and 18), as some housing development has already been completed. To ascertain the efficacy of monitoring and control procedures in this particular setting, the main objective will be to compile insights from the IHDP offices.

1.7. LIMITATIONS OF THE STUDY

There could be numerous limitations on the study. Given that numerous projects have been completed to differing degrees, one major drawback is the possible unavailability of stakeholders from consulting and contracting firms. As a result, the study will mostly depend on the conclusions made by the IHDP offices, which can limit access to in-depth project data. The general breadth and complexity of the research findings may also be impacted by the lack of resources available for in-depth analysis.

1.8. ORGANIZATION OF THE STUDY

This research paper is organized into five chapters, each addressing a specific topic. It begins with an introduction, reviews related literatures, explains research design, presents findings, and concludes with recommendations for future research.

The first chapter of the study provides a background, problem statement, research questions, objectives, significance, potential contributions, scope, and limitations, laying the groundwork for the rest of the paper. The second chapter explores the existing literature on the research topic, identifying gaps and justifying the need for the study. It provides a theoretical framework, research design, and methodologies for the study. The third chapter provides a comprehensive account of the research design and methodologies used in the study, including data collection and presentation methods,

ensuring transparency and replicability, and serving as a bridge between the literature review and findings presentation. The fourth chapter presents the research's findings, presenting a detailed analysis and interpretation of the collected data, comparing them with existing literature, and providing empirical evidence to support the findings. The final chapter presents the research's key findings, conclusions, recommendations, policy implications, and practical applications, serving as the culmination of the research process and highlighting its contributions to the field.

1.9. Definitions of terms

Condominium Housing Projects: Condominium housing projects are multi-unit buildings where common areas are collectively owned, but individual units are privately owned (UN-HABITAT, 2010).

An Integrated Housing Development Project is a comprehensive approach to housing that combines the design and construction of multiple residential units on a single plot of land, often with a focus on low- and middle-income populations, and includes features such as affordable housing options, job creation, and infrastructure development (IHDP, 2007).

Project: The Project Management Body of Knowledge defines a project as a short-term undertaking aiming to produce a specific good, service, or outcome (PMBOK, 2013).

The 20/80 Condominium Housing Project is a government-led housing initiative in Ethiopia that aims to provide affordable housing units, with 20% of the units allocated to low-income households and 80% to middle-income households, focusing on urban poverty alleviation and sustainable urbanization (IHDP, 2007).

Project management is the application of knowledge, skills, tools and techniques to manage project activities such as initiating, planning, exciting, controlling and closing to meet the project requirement. (PMBOOK 2013).

Project life cycle: as defined by Jennifer, encompasses phases from initiation to closure, including identifying the project's need or objective, planning, execution, monitoring, controlling, and concluding with project closure, each marked by specific activities and deliverables (Jennifer Bridges, 2023).

A project's monitoring and controlling: The monitoring and controlling phase, involves tracking progress, identifying issues, and implementing solutions to ensure project objectives are met, locate potential problems, and deliver successful results through stakeholder interaction (PMBOK 6th ed., 2017).

Monitoring: Monitoring and controlling involves continuously tracking, supervising, and assessing a project's actions and advancement by monitoring various variables, including risk, cost, performance, progress, quality, and risk, to ensure alignment with management objectives and plans (PMBOK Guide 6th ed., 2017).

Controlling: is the process of keeping an eye on and reporting on the way that project activities are being carried out in order to evaluate performance and provide recommendations for necessary adjustments to maintain optimal project performance, according to the PMBOK 2017.

Schedule Delay Management: is a crucial aspect of project management that involves identifying, analyzing, and responding to delays to ensure timely project completion, which includes several key steps to effectively address schedule deviations (PMBOK Guide 6th ed., 2013).

Risk management: is an essential step in project management that involves methodically locating, assessing, and mitigating risks to guarantee project success, which includes several crucial actions necessary for efficient risk management and mitigation (PMBOK Guide 6th ed., 2013).

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. INTRODUCTION

This literature review examines the current state of knowledge and research on monitoring and controlling practices in housing projects in Addis Ababa. It highlights the importance of monitoring and controlling in the project lifecycle, challenges associated with these practices, and the internal and external factors shaping them. The review also explores the role of project management tools and techniques in enhancing efficiency. It concludes by identifying gaps in existing research and highlighting the need for further investigation into the assessment of monitoring and controlling practices in Addis Ababa's housing projects.

2.2. Theoretical Review

2.2.1. Housing Theory

Golland and Blake's 2004 book "Housing Development: Theory, Process, and Practice" offers a thorough analysis of the conceptual and operational facets of the field. From project inception to project completion, the writers address the many phases of the housing construction process, emphasizing the significance of efficient planning, design, and management. The theory, highlights the theoretical and policy circumstances in which housing development occurs as an integrated process by bringing together information on housing production, housing provision, and the housing environment.

A major area of focus has been the evolution of housing affordability, urban poverty

reduction, and housing typologies. As Adamu (2012) points out, housing has consistently been a fundamental human need throughout human history, and governments and policymakers have struggled to provide adequate housing. These historical developments of housing practices and theories have played a crucial role in shaping the theoretical foundation for Addis Ababa's housing development. The theory of housing affordability is one of the main theories related to housing development. According to this view, housing should to be within the financial means of all households, even those with low incomes. The government of Addis Ababa has implemented a number of housing regulations and programs, including the Integrated Housing Development Program (IHDP) and the 20/80 condominium housing program, with the goal of giving the urban poor access to cheap housing (Keller & Mukudi-Omwami, 2017). Another theory is urban poverty alleviation theory suggests housing development can reduce poverty by improving living conditions and promoting social inclusion (Maranna, 2022), (IHDP, 2007).

The theory of housing typologies holds significance in the Addis Ababa environment. The concept and Adamu's remark both suggest that a wide variety of housing options ought to be offered in order to satisfy the different requirements and tastes of different socioeconomic groups. As mentioned by Adamu (2012), this encompasses a variety of housing typologies, including condominiums, public housing, and private housing. Furthermore, the housing development in Addis Ababa is based on historical traditions and theories, with the main objectives being the provision of cheap housing for the urban poor and the advancement of social inclusion.

2.2.2. Project Performance

In housing projects, evaluating project performance is essential to guaranteeing satisfactory results. The study conducted by Solomon Habtewold on the 20/80

condominium housing developments in Bole Sub-city offers insightful information about the variables affecting project performance. The study identifies critical factors that impact project success, such as material costs, budgetary difficulties, inadequate planning, a lack of communication, problems with decision-making, and a lack of manpower (Solomon, 2020).

Project performance evaluation in the context of housing projects entails examining a number of factors to make sure projects accomplish their goals successfully and efficiently. The success of a project is largely dependent on a number of factors, including stakeholder satisfaction, quality control, cost management, resource allocation, and deadline adherence (Amsale Tsige, 2019).

The significance of monitoring and controlling procedures in overcoming barriers and optimizing project outcomes is emphasized by theoretical frameworks for assessing project performance. According to Gemeda (2012), a proactive approach to risk management, astute decision-making processes, good stakeholder communication, and economical resource usage are necessary for a successful project performance evaluation in the housing project setting).

The research conducted by Solomon Habtewold can aid stakeholders and project managers in comprehending the crucial elements that impact the success of housing projects and in putting risk mitigation, communication, decision-making, and resource allocation methods into practice.

2.2.3. Project Management Knowledge and Tools

A solid foundation in project management knowledge and the efficient use of project management tools are essential for the successful implementation of projects. The PMBOK Guide 2013 outlines ten key knowledge areas for project success: Project Integration Management, Project Scope Management, Time Management, Cost

Management, Quality Management, Human Resource Management, Project Communications Management, Project Risk Management, Project Procurement Management, and Project Stakeholder Management. These areas ensure proper coordination, control, cost management, quality, and risk management. Project managers can ensure project completion within specified scope, timeline, and budget while maintaining high-quality standards and stakeholder satisfaction. Utilizing project management tools like Gantt charts, critical path analysis, earned value management, and risk registers enhances efficiency and performance (Ana Chersulich, 2021).

According to Yidnekache's study the effective use of project management tools and a solid basis in project management expertise were necessary for the successful implementation of housing development programs in Addis Ababa. Project management knowledge areas encompass various aspects of project planning, execution, and control. These areas include scope management, time management, cost management, quality management, human resource management, communications management, risk management, and procurement management (Yidenekachew, 2018). By applying this knowledge effectively, project managers can ensure that projects are completed within the specified scope, timeline, and budget while maintaining high-quality standards.

Planning, observing, and managing project activities are made much easier with the use of project management tools like earned value management, Gantt charts, critical path analysis, and risk registers. Project managers may better visualize project timetables, track project progress, identify essential activities, and manage risks by using these tools (Teferi, 2020). Housing construction initiatives can increase productivity, cut down on delays, and boost overall project performance by utilizing project management technologies. Terefe's research highlights challenges in Addis Ababa housing

development programs, emphasizing the need for effective project management and knowledge of management tools to ensure success. The author stated that project management integration in housing development programs improves performance, minimizes risks, and delivers high-quality solutions, addressing the growing demand for affordable housing in Addis Ababa.

2.2.4. Schedule Delay Management

The study conducted by Lidiya Tibebu at the Koye Feche site in Addis Abeba on the assessment of schedule delays in 20/80 condominium housing construction projects provides insight into the internal and external reasons that cause delays as well as the effects such delays have on project results (Lydiya, 2022). She noticed, in construction projects, schedule delays may have a big effect on project budgets, schedules, and success in general.

According to Lydia's research, a number of internal and external reasons might cause construction project timeline delays. Poor project planning, insufficient resource allocation, poor stakeholder communication, and modifications to the project's scope or design are examples of internal factors. Weather disruptions, regulatory delays, external market circumstances, and unanticipated events like labor strikes or shortages of materials are examples of external causes.

The study carried out by Lydia reveals that schedule delays in construction projects may lead to increased costs, legal disputes, and compromised quality. They may also harm stakeholder relationships, erode trust, and damage the reputation of the project team. Effective methods for handling schedule delays, reducing their effects, and maintaining project timelines and budgets include thorough planning, frequent monitoring, risk management, open communication, and contingency planning (Paolo Kukhnavets, 2024).

2.2.5. Housing Policies and Urban Development

Hawke's Bay Regional Council (2016) produced material that emphasized how crucial it is to combine comprehensive urban development strategies with housing policies in order to guarantee equitable and sustainable growth. A number of urban issues, including the scarcity of cheap housing, informal settlements, and socioeconomic inequality, can be resolved by efficient housing policy, according to the review and Ahuri study from 2002. Through the integration of housing projects into wider urban planning frameworks, planners can promote more livable, egalitarian, and environmentally sustainable urban environments. The research emphasizes the need for local governments to take a more active role in developing and implementing housing policies tailored to the unique social, economic, and spatial contexts of their communities. This includes conducting thorough assessments of housing needs, market dynamics, and the potential impacts of policy interventions (Ahuri, 2002) & Hawke's Bay Regional Council. (2016).

Ethiopia's government, particularly in Addis Ababa, has implemented housing policies to provide affordable housing for low-income families. The Integrated Housing Development Program (IHDP) aims to construct condominium units and implement strategies like subsidized housing, rent control measures, and serviced land. However, challenges remain in ensuring sustainability and inclusivity. Participatory approaches, where local communities are involved in decision-making, can help align housing policies with the needs of urban poor populations (Keller & Mukudi-Omwami, 2017).

2.2.6. Population Growth and Housing

Population increase has a major impact on housing demand, and this relationship is affected by a number of factors. Studies indicates that an increase in the population is

associated with a proportionate rise in housing demand, which in turn pushes up housing prices (He Li, Xiaoxuan Liang, 2021). Particularly, the housing price rise is linked to population growth at a rate of one percentage point every 1.4 percentage points. According to the study, the percentage of the general population that is economically active between the ages of 15 and 64 also affects changes in house prices. Population surges have very little impact on house price swings in urban China, but population increase does contribute to the trend in housing prices. It is advised that population growth remain constant so as to reduce the rise in housing costs and advance economic stability. However, a number of other variables also indicated in studies to affect the cost of housing, including the quantity of available homes, mortgage rates, GDP per person, and unemployment rate (Ali Zeynali Azim, et. Al 2023) & (Xinying Ding, 2022).

The reports of the studies carried out in 2010 in UNECE countries, by United Nations Economic Commission for Europe on measuring population and housing indicated housing supply affects opportunities for increased population through immigration and the creation of new households, leading to a two-way interaction between population and housing. The study also indicated, sufficient housing availability can affect the timing of fertility or the number of children people have, draw in immigrants, and affect residential site choices. Furthermore, for young people to enter the housing market and to encourage the creation of families, a broad supply of houses, including inexpensive housing for rent, is essential (UNECE, 2010).

2.3. HOUSING PROJECTS

Building housing projects is essential to solving the world's housing crisis and enhancing quality of life. Approximately one billion people live in slums or informal

settlements worldwide, with the majority of them residing in Africa and Asia, according to UN projections (Hone Mandefro, 2022). Various housing projects, including Ethiopia's Integrated Housing Development Programme, have been developed by governments and groups to solve this issue. The aim of this program was to provide low-income residents access to affordable homes. In all, the initiative has constructed about 500,000 dwelling units, the most of which are in Addis Ababa. Nevertheless, the program has encountered difficulties, such as the development of feeble and dispersed communities, subpar condominiums, and corruption. In contrast, other housing projects, such as those implemented by Habitat for Humanity, focus on community-based approaches and sustainable development. These projects aim to provide safe and affordable housing, as well as improve sanitation and hygiene facilities (UN-HABITAT (nd).

Housing affects employment dynamics, growth in the economy, and general quality of life at the individual and neighborhood levels, which makes it essential for economic opportunity. Underscoring the role that integrated infrastructure planning plays in economic development, Grant Thornton (2018) underlines the importance of affordable housing to sustaining vibrant cities, attracting in investment, and preserving talent.

The literature review emphasizes the significance of understanding the correlation between housing and health, in addition to the quality and quantifiability of housing settings. In order to improve population health through improved housing conditions, research highlights the necessity for a coordinated and integrated body of housing and health research. Research from other areas of study is incorporated into the evaluation of housing projects in order to provide insight into the environmental causes of disease, understand the mechanisms affecting health, and investigate the relationship between housing availability and health care regulations (Stephen H. 1999).

Furthermore, utilizing a multi-criteria decision support system to evaluate sustainability indicators, building standards, and housing quality is necessary to assess the quality of housing settings. In order to enhance building interiors, this evaluation method takes into consideration variables including energy efficiency, architectural design, construction materials, and project management (Lukasz M., 2022).

2.4. Critical Factors Affecting Construction Performance in Ethiopia

Different studies reveal that critical factors affecting construction housing project performance globally include lack of communication, teamwork, skilled workers, poor planning, scheduling, and financial difficulties, emphasizing the need for comprehensive understanding to improve project quality and performance.

According to research by Duncan (2020), poor project management techniques frequently cause construction projects to perform poorly, which results in delays and cost overruns. The study emphasized how essential efficient project scheduling and planning are to improving project performance. Additionally, research has been conducted on the role of the construction industry in economic development, the difficulties associated with adopting robotics and automated systems, and the scope of real estate and infrastructure projects worldwide by a variety of scholars, including Durdyev & Ismail (2012), Delgado et al. (2019), and Zawya (2020). These studies shed light on the larger framework of crucial elements influencing the performance of building projects globally.

Research on building housing projects in Ethiopia highlights the significance of crucial components that are essential to project success, including stakeholder involvement, resource management, delays, cost overruns, and quality control. Mengistu (2023) highlighted how project delays affect Ethiopian housing development projects, pointed

out that delays are a primary reason why projects fail and can result in large cost overruns. In the Ethiopian construction industry, Ahmed (2019) concentrated on resource and stakeholder management, underlining the benefits they have for project quality and schedule performance. In his 2019 the paper, Gebremedhin addressed the challenges that Ethiopian building projects face and underscored the value of sound project management techniques.

In their assessment of the risk variables affecting construction projects in Gondar, Ethiopia, the study carried out by Amare Tilahun found several critical risk factors that have a significant effect on project performance, including inflation, price fluctuations, late payments to contractors, and poor material quality (Amare Tilahun et al., 2022).

2.5. Monitoring and Control Practices in Construction Projects

For construction projects to be successful, monitoring and control procedures are essential. A survey of the literature reveals that many methods, instruments, and best practices are used in order to ensure that projects are completed on time and within budget.

Construction-specific project management software and other automated monitoring technologies are becoming more and more common since they simplify workflows and offer real-time information, (Khalid Mhmoud Alzubi, 2023). These technologies improve overall project visibility, streamline project information, and make progress tracking easier. Software designed specifically for the construction industry is very helpful since it meets the particular requirements of these projects and makes scheduling, resource allocation, and cost estimation easier.

Another essential strategy for successful building project monitoring is to implement technology. Proactive issue identification and resolution can be made possible by

automation and real-time data collecting, which can greatly increase accuracy and efficiency. Building information modeling (BIM), drones, and sensors are among the technologies that are being used more and more for safety management, compliance verification, and progress monitoring (Trimble, 2022) & (EBCS, 2014).

Monitoring and controlling construction projects successfully also require effective stakeholder alignment and communication. Misunderstandings and miscommunications can be reduced, which will increase the project's success, by keeping lines of communication open and involve stakeholders at every stage (Jap Sam Books, 2021).

A well-established notion in project management is the significance of Key Performance Indicators (KPIs) in guaranteeing project success. Critical success factors (CSFs) and predefined objectives are the benchmarks against which project performance is tracked and evaluated using KPIs, which are quantitative metrics. Project managers may make educated decisions and stay on track to meet project objectives by using real-time data from effective KPIs (Carolina Cruz, et. al, 2020). A number of studies have shown how important it is that KPIs match project goals and CSFs. For example, a study on simulation projects by Mohsen Jahangirian identified five CSFs and suggested three KPIs to measure project success from various angles. KPIs were divided into four categories by Carollina in a subsequent study on project-based organizations: project management success, deliverable success, delivery activities, and operations success (Mohsen Jahangirian, 2017 & Carollina, 2020). The literatures also emphasize how crucial it is to choose KPIs that are pertinent to the project, measurable, and feasible. To make sure KPIs continue to be useful in directing project management, they should be routinely evaluated and improved as the project moves along.

2.6. Significance of Monitoring and Control of Housing Projects

For the construction sector to succeed and maintain quality and efficiency, several studies underscore the significance of efficient monitoring and control procedures in housing projects. The varied characteristics of project management in obtaining desired results was highlighted by Chua et al. (1999), who outlined crucial success criteria for various project objectives. In a similar vein, Chan et al. (2004) determined what factors affect construction project success and underlined the necessity of careful preparation, coordination, and control throughout the project lifecycle.

Project Management Process Maturity Model was first presented by Ibbs & Kwak (2004) as a systematic framework for evaluating and enhancing project management practices in the field of project management assessment models. The Project Management Maturity Model, developed by Kerzner (2004), produced an important contribution to this discipline by stressing the significance of maturity and continuous improvement in project management procedures.

According to Schiltz (2004), the financial benefits of project management emphasize the beneficial effects of effective monitoring and control procedures on project outcomes. In order to encourage continuous improvement, Dey (2004) argued in favor of benchmarking project management techniques and emphasized the significance of comparing metrics for performance.

The Analytic Hierarchy Process was initially laid out by Saaty (2004) as an approach for decision-making, emphasizing the significance of ranking crucial success factors and sub-factors in project management. Together, these many perspectives highlight how important it is for housing projects to have strong monitoring and control procedures in place to guarantee on-time delivery, financial viability, and satisfactory outcomes.

Mengistu's 2023 study evaluated the project management procedures used by Ethiopia's public housing organizations, emphasizing the importance of control and oversight for project success. The study found weaknesses in management practices and advocated for ongoing improvement. The project planning processes employed in the Addis Ababa housing projects were evaluated by Ahmed's 2019 study, which emphasized the need of solid planning for project success by focusing on team commitment, management experience, stakeholder involvement, and tool utilization.

2.7. Empirical Review

The performance, difficulties, and results of housing projects have been the focus of a great deal of empirical study conducted worldwide. Key findings from empirical studies on housing projects from a worldwide viewpoint are summarized in this survey of the literature. Empirical study increases our understanding of the complex relationships between housing projects and labor market dynamics, homeownership decisions, and the overall effects of housing policies on the well-being of society.

The empirical study of housing projects examines the different elements that govern housing development and its effects on social and economic facets through a practical approach. Dieleman & Everaers' (1994) study examined life course patterns and housing market conditions as they investigated the shift from renting to homeownership. The processes of decision-making and societal consequences of housing decisions were clarified by this study.

The influence of the housing market crisis on labor mobility and unemployment was examined in a study by Farber (2012), emphasizing the relationship between housing dynamics and economic downturns. The study revealed light on the ways in which housing market circumstances can affect labor market results and people's capacity to

seek work. Leung (2004) also carried out a thorough analysis of the literature on macroeconomics and housing, examining the complex interplay between housing markets and economic variables. This research added to our understanding of how housing regulations and market dynamics are shaped by macroeconomic trends.

A framework for predicting housing demands and comprehending the dynamics of residential building was provided by Mayer & Somerville's (2000) study, which concentrated on estimating housing supply using the Urban Growth Model. Important insights into the variables influencing the supply of housing and urban growth were provided by this empirical study.

The effectiveness of housing projects in many locations, such as Ethiopia and Latin America and the Caribbean, has been evaluated by empirical research. These studies have pinpointed a number of variables that impact project performance, including labor shortages, financial concerns, planning, communication, and decision-making, as well as material prices. The performance of home construction projects has been assessed through the application of Earned Value Analysis (EVA), which offers insights into project advancement and cost effectiveness (Adamu, (2012).

The methods and difficulties of putting housing construction projects into action in different nations have been studied empirically. These studies have made clear how important it is to have efficient management procedures, monitoring, quality control, and testing systems in place to guarantee project success (Sunikka-Blank, M., Abdie, D., & Bardhan, R., (2021). It has been investigated how housing growth affects urbanization and city administration, as well as factors like accessibility and affordability of housing.

Global housing affordability and accessibility have been the topic of empirical research. Using information from surveys and statistical models, studies have quantified and

contrasted housing affordability across cities. Analysis has been done on the variables affecting home affordability, including income levels, housing costs, and governmental regulations (Kallergis, A., 2018).

Empirical studies identify key characteristics necessary for project performance assessment and the implementation of successful management techniques in global housing projects and Addis Ababa's execution phase.

Resource Allocation: it is allocating and managing resources in a way that aligns with the strategic objectives established by an organization is known as resource allocation. It entails weighing conflicting demands and priorities in order to choose the best course of action (Xiao & Chen, 2013).

During the housing project execution phase, it is essential to allocate resources like labor, materials, and equipment properly. Effective resource allocation has been demonstrated by empirical research to have a favorable impact on project progress and quality outcomes. A crucial component of project management in the building of houses is resource allocation. To ensure the proper completion of a project, it entails the distribution and usage of a variety of resources, including personnel, supplies, and equipment (Catherine, 2019). Keeping project timelines on track, keeping costs under control, and producing high-quality housing units all depend on the efficient deployment of resources. Factors such as project size, complexity, location, availability, technical capacity of the developer, incorporation of infrastructure, and timely funding all have an impact on how resources are allocated for housing projects (Binita Bhattarai, 2022). Efficient resource allocation significantly impacts housing development performance, resulting in project advancement, reduced setbacks, and superior quality deliverables, as well as lower costs and increased profitability for home building enterprises. To effectively allocate resources, reduce waste, and guarantee a balanced

and efficient system, housing building industry project managers employ tactics such as a detailed project plan, just-in-time delivery, resource leveling approaches, and constant monitoring (Amir Karimzadeh, 2023).

Quality assurance: Empirical study emphasizes the significance of quality assurance in construction projects, providing high-quality housing units during the execution phase. To make sure that the finished deliverables in construction projects fulfill the necessary quality standards and specifications, quality assurance is (Kiran Basu, 2018). Throughout the project lifecycle, it entails applying methodical methods and procedures to prevent mistakes, defects, and deviations from quality expectations. Research has demonstrated that a number of quality control procedures are essential when building projects are being carried out (Shiqi Wu, 2022), (Jemima Yarnold,2021). Among these steps are:

- The process-based approach involves putting in place procedures that emphasize quality management all the way through the project lifecycle in order to guarantee uniformity and compliance with quality standards.
- The Product-Based Approach places significant emphasis on the verification and validation of project deliverables to guarantee they align with the necessary quality criteria and specifications.
- Efficient communication and cooperation among project participants, such as designers, builders, and quality control teams, are essential to guarantee a mutual comprehension of quality standards and anticipations.

Shiqi Wu reveals that effective quality assurance practices significantly enhance project success in construction projects, leading to improved outcomes, reduced rework, increased customer satisfaction, and overall project success.

Communications: Effective communication with government agencies, contractors,

and citizens is vital, and stakeholder involvement plays a critical role in project execution by guaranteeing alignment with community requirements and expectations. Any process of engagement or information exchange with pertinent individuals, groups, organizations, or systems that may have an impact on or be impacted by the project is considered stakeholder communication (Mok, K. Y., Shen, G. Q., & Yang, J., 2015). The study underscored that stakeholder communication that works is essential for: Firstly, matching stakeholder expectations with project objectives, secondly, encouraging teamwork and collaboration between project participants, Thirdly, Recognizing and promptly resolving issues and concerns from stakeholders. Finally, Improving accountability and openness in project decision-making. The researchers suggest strategies for effective stakeholder communication during project execution, including developing a plan, using appropriate channels, providing timely information, encouraging open and transparent communication, and adapting communication styles to suit each stakeholder's needs and preferences. Stakeholder communication during project execution enhances satisfaction, collaboration, reduces conflicts, and increases the likelihood of success. Effective strategies and open dialogue with stakeholders align projects with community needs, ensuring successful outcomes and community acceptance.

Regulatory Compliance: Local regulations and building codes are crucial for successful execution of housing projects in Addis Ababa, as non-compliance may cause delays, cost overruns, and legal issues (Eyiah-Botwe, E., Aigbavboa, C. O., & Thwala, W. D. 2016). Addis Ababa's construction industry is regulated by laws, regulations, and licensing, ensuring safety, quality, and environmental compliance, but presents challenges for international companies.

Regulatory compliance in Addis Ababa is challenging due to bureaucratic procedures

and lengthy approval timelines for construction projects. Developing robust contracts that protect interests of all parties, aligning with Ethiopian contract laws, commercial codes, and dispute resolution practices, is essential for minimizing legal risks and ensuring project success (EEA, 2018).

In Addis Ababa, breaking local laws and building norms can have serious repercussions for housing developments, such as delays, overspending, legal problems, and harm to one's reputation. This may lead to penalties, court costs, and perhaps the loss of a license, which would make it harder for construction companies to get new contracts (Metropolitan Real Estate, 2018)

Construction firms in Addis Ababa should adopt strategies for regulatory compliance in housing projects, including thorough understanding of local laws, proactive permit acquisition, contractual alignment, and continuous monitoring and reporting to ensure compliance throughout the project lifecycle (Fitsum T., 2020), (Seyoum A., 2022).

Risk Management: Proactive risk management strategies are crucial for mitigating potential risks and uncertainties in housing projects, as highlighted in studies on Addis Ababa housing projects. Proactive risk management strategies are crucial for mitigating potential risks and uncertainties in housing projects, as highlighted in studies on Addis Ababa housing projects (Abebe Demisse, 2021). Risk management is crucial in construction projects, especially housing, to identify, assess, and respond to uncertainties that could impact time, cost, quality, safety, and environmental sustainability.

As Abebe's study revealed proactive risk management strategies are crucial for housing projects, including risk identification and assessment, risk response planning, continuous risk monitoring and control, and stakeholder engagement. These strategies ensure a comprehensive understanding of potential risks, mitigate potential threats,

implement control measures, and ensure appropriate actions are taken. As seen by the housing projects in Addis Ababa, proactive risk management techniques greatly improve the success of housing projects by cutting down on delays, improving quality, and raising stakeholder satisfaction.

In Addis Abeba in particular, researchers can examine factors that impact project outcomes related to housing initiatives. Important components of project management include stakeholder communication, quality control, and resource allocation. Efficient tactics guarantee the provision of high-caliber housing, satisfy demand, and adhere to requirements. Having frank discussions with stakeholders is in line with what the community needs. Resolving issues with regulatory compliance reduces risks and guarantees the effective completion of projects. In general, successful housing developments depend on efficient monitoring and controlling procedures.

2.8. Conceptual Framework

The assessment of the monitoring and controlling processes in housing projects is facilitated by the conceptual framework, which highlights the interconnection of its components. Four essential elements are identified by the framework as influencing housing project success:

- Effective communication between project stakeholders, such as the client, consultant, and contractor, is essential to the project's success. To guarantee effective communication, project managers need to possess qualities like empathy, active listening, and dispute resolution abilities.
- Ensuring Quality: Delivering high-quality housing units requires the use of strong quality assurance methods at every stage of the project. This covers elements like facilities, safety, and the surrounding physical environment.

- Regulatory Compliance: When housing projects are being carried out, it is imperative that municipal ordinances, building rules, and legal requirements be followed. Legal problems, cost overruns, and delays might result from noncompliance.
- Risk management: The key to reducing possible difficulties in housing projects is early risk identification, assessment, and response. Good risk management techniques contribute to the success of project outcomes.

CHAPTER THREE

3. RESEARCH METHODOLOGY

This chapter may describe the appropriate research design approach and methodologies to be followed in order to achieve the research objectives. All the relevant data collection techniques (sampling), data sources, and analysis may be described in this chapter.

3.2. RESEARCH DESIGN AND APPROACH

A research design is a blueprint or plan that describes the steps involved in gathering and evaluating data for a study. It serves as a framework to help the researcher finish the investigation and make ensuring the data gathered is valid, relevant, and trustworthy. The methodology for data collection, data analysis, and interpretation of the results are all determined by the research design (Gibaldi, 2009). There are numerous types of research (Anol Bhattacherjee, 2012) including Quantitative Research, Qualitative Research, Mixed Methods Research, Experimental Research Design, Survey Research, Case Study Research, Descriptive Research, Explanatory Research, Exploratory Research, Historical Research. Few of them are described as follows:

Quantitative Research Design: In this kind of design, data is analyzed using statistical techniques and numerical data. The goal of quantitative research is to find patterns and trends in data by using statistical methods and objective measurements.

Qualitative Research Design: In this kind of design, the data is analyzed through the use of non-numerical data, including text, photos, or videos. Understanding the meanings and interpretations of the data is the main goal of qualitative research, which

frequently makes use of methods like focus groups, interviews, and content analysis.

Survey Research Design: This kind of design uses questionnaires or surveys or other self-reported measures to gather data. Survey research is frequently employed to collect data regarding views, perspectives, or actions.

Descriptive research designs: These include summarizing the features of a specific population, occasion, or occurrence. Often, descriptive research is performed to give a topic's summary or to identify trends and patterns.

A descriptive research design for monitoring and control practices of the housing projects involves systematically gathering and analyzing data to describe the state of these practices, even in cases where projects were completed in vain, involves systematically examining and documenting the processes, procedures, and outcomes related to monitoring and control throughout the project cycle. It aims to provide a comprehensive understanding of how monitoring and control are implemented in condo housing projects, including the processes, tools, and effectiveness of these practices (Hannan, M. T, & Freeman, J. 1989). The research will adopt a descriptive and analytical approach, focusing on assessing the monitoring and control practices of housing projects.

3.3. METHOD OF DATA COLLECTION

In order to collect relevant data, the research followed quantitative design approach through questionnaire survey and secondary data gathering of related and relevant available documents.

- Questionnaire (Kerzner, 2017) & (Teshome & Mekonen, 2020; Birhanu & Bazezew, 2021): the questionnaire may be adopted from previous similar research and can be modified to suit the research content. After modification is done, the

questionnaire will be distributed to respondents. The modified questionnaire template is available in the ANNEXED section.

- An interview will be arranged to investigate more and to minimize contractor's biases,
- Secondary data will be used to review the compiled report data and relevant documents particularly the technical specifications.

3.4. DATA SOURCES

The research dominantly may use primary data of compiled reports, technical documents, published and unpublished documents, since the project was almost in completing phase. Besides the secondary data primary data also may be utilize in order to support the secondary data sources.

3.5. POPULATION

The population under study may include stakeholders involved in 20/80 Koye Feche 2 condominium housing projects in Addis Ababa, including integrated housing development program project offices, contractors, consultants, and residents. There are five project offices at Koye Feche 2 sites such as project office 11, 12 16 17 & 18 and currently they are merged to one project office namely project 7. The total number of buildings has been managed by the so-called project 7 are over 1070. Various types of professionals were participated in the construction of the housing projects, including managers, engineers, finance officers, human resource personnels, skilled and non-skilled employees and community representatives. Among all the employees participated in the projects, target population was selected purposively based on their profession, experiences, knowledge, responsibility and willingness who are able to response the questionnaire actively. These employees were directly related to

monitoring and controlling practices in the project so that they have better experiences, knowledges and information in order to answer the questionnaire. Therefore, the total population size of research was found to be 97 individuals with different profession, responsibility and experiences.

3.6. SAMPLING METHOD

Purposive sampling is a non-probability sampling technique where researchers deliberately select participants based on specific criteria relevant to the research objectives. It can provide rich and informative data related to the research (Patton, M. Q. 204). Purposeful sampling or criteria sampling may be particularly suitable for ensuring that the selected projects provide valuable insights into monitoring and control practices in housing projects. This method allows for the targeted selection of projects based on specific criteria related to the research objectives and the characteristics of the population of interest.

Based on the defined research objectives and specific gathered information, criteria related to profession (education), experiences (given responsibilities) and other relevant attributes will be established to strategically select participants which are likely to provide valuable insights into the research objectives (William,2006).

3.6.1. SAMPLE SIZE

Determining the sample size may depend on several factors such as the research objectives, population size, level of confidence, margin of error and expected variability in the data.

The sample size can be determined using the equation 3.1 below (Singh and Masuku (2014):

$$n = \frac{N \cdot Z^2 \cdot p \cdot q}{(N-1) \cdot e^2 + Z^2 \cdot p \cdot q}$$

Equation 3.1

Where: N =Population size

n = Population size

Z = Z-value (the number of standard deviations from the mean, corresponding to the desired confidence level, e.g. 1.96 for 95% confidence)

P = Proportion of the population having the characteristic of interest (if unknown, 0.5 is used as it maximizes the sample size)

Q = 1 – p (the proportion of the population not having the characteristic of interest)

e = Margin of error (the desired level of precision, e.g., 0.05 for ±5%)

As it described in the previous section, the total target population was 97, and the confidence level was determined to be 95% that gave Z value is 1.96 and the margin error was 0.05 (5%). Accordingly, the sample size was calculated using the equation 3.1 and found to be 78.

3.7. METHOD OF DATA ANALYSIS

The data collected from the questionnaire were converted into an Excel sheet as a preparation to the SPSS and analyzed and interpreted quantitatively to assess monitoring and controlling practices in housing projects. Due to the limitations of obtaining qualitative data through interviews, the research utilized a quantitative design. Descriptive statistics, including percentages and frequencies, were employed to achieve the objectives. The collected data were analyzed using the recent version of SPSS 27 software and Microsoft Excel 2019. The findings of the analysis were

presented in tables for clarity and ease of understanding.

Relative Importance Index (RII) Calculation

The rankings of each component included in the questionnaire were ascertained using the Relative Importance Index (RII) technique. A total score was determined by adding the respondents' responses for each factor. The following formula was then used to determine the RII values:

$$\mathrm{RII} = \frac{\sum(W)}{A \times N}$$

Equation 3.2

Where:

Σ(w) is the sum of the weights iven to each factor by respondents,
A is the highest possible weight (e.g., if using a Likert scale of 1 to 5, A = 5),
N is the total number of respondents.

3.8. VALIDITY AND RELIABILITY CHECK

The purpose of the questionnaire "Assessment of Monitoring and Control Practices in Addis Ababa Housing Projects" is to assess how well the Koye Feche site's housing projects' monitoring and control procedures are working." The purpose of the questionnaire, which is grounded in project management principles, is to evaluate the methods used by the different project stakeholders. The questionnaire's validity and reliability are covered in this section.

Validity

The questionnaire's face validity is ensured by its clear and concise language, making it easy for respondents to understand and answer the questions. The comprehensive coverage of project outcomes, control procedures, and monitoring procedures strengthens the questionnaire's content validity. Specific questions about project management procedures, such as site visits and cost tracking, also enhance the questionnaire's content validity. The introduction clearly states the study's goal, academic setting, and promise of anonymity and secrecy, increasing respondents' trust

and willingness to provide truthful answers. This aligns with Creswell and Creswell's (2018) suggestion that a well-crafted introduction can increase a questionnaire's validity by building rapport and trust with respondents.

Reliability

The questionnaire's organized format, clear instructions, and consistent response possibilities all contribute to its reliability. According to Saunders et al. (2019), by reducing ambiguity and guaranteeing respondents' consistent interpretation of the questions, a well-designed questionnaire with consistent response possibilities might enhance the dependability of the data collected.

The questionnaire used in the study is a modified version of one that was tried and tested earlier. As a result, prior research has already demonstrated the questionnaire's reliability. As a result, it would be redundant and unnecessary to do a reliability test using Cronbach's alpha.

3.10. ETHICAL CONSIDERATION

The researcher followed a number of important ethical rules. Participants could express sincere ideas and were guaranteed that their participation was voluntary. As no personal information was asked for, their answers remained confidential and anonymous. Furthermore, before gathering data from many sources, the researcher got the agreement of all participants and the appropriate authorities. This made guaranteed that all data gathering followed ethical guidelines and was carried out with the required consent.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

4.1. Introduction

In order to address the common issue of ineffective project monitoring and controlling in the execution phase, which is a persistent challenge in the modern construction industry of developing countries, the study examined the monitoring and controlling practices used in the construction of the 20/80 condominium housing projects at the Koye Feche site in Addis Ababa, Ethiopia. Data were gathered and analyzed through a questionnaire, document analysis, and a review of related literature. Research questions were then developed and validated in order to improve the performance of the construction industry going forward.

4.2. Response Rate

A total of 98 questionnaires were given for the questionnaire survey, which was done among clients, consultants, and contractors. To determine the representativeness of the sample, the response rate—the ratio of completed questionnaires to those distributed—was computed. Out of the 98 questionnaires given, 69 were collected, yielding an overall response rate of 70.4%. Since this rate is higher than the widely stated criteria of 60%, it is seen as acceptable (Ricahardson, 2008). The response rate was calculated using equation 4.1.

$$Response\ Rate = \frac{Number\ of\ questionnaires\ that\ were\ returned}{Total\ number\ of\ questionnaires\ sent\ out} x100 \qquad \textit{Equation 4.1}$$

The high response rate indicates the sample's representativeness, providing reliable and generalizable results, especially in understanding monitoring and controlling practices

in housing construction projects.

4.2. Demographic Characteristics of Respondents

The purpose of demographic characteristics of questionnaire respondents in a research study is to provide a comprehensive understanding of the participants involved in the study. This includes their educational backgrounds, relevant work experiences, designations, and gender distribution. The demographic analysis helps to identify the diversity of the sample, which is essential for ensuring the validity and generalizability of the research findings.

Gender Distribution:

The study also examined the gender distribution among the respondents. The data presented in table 4-1. showed that the majority of participants were male (92.4%), with a smaller percentage being female (7.2%). This gender distribution highlights a significant gender imbalance in the sample, with a predominance of male participants.

Among the contractor group (table 4-2.), which constituted the largest portion of respondents at 41%, the gender distribution is heavily skewed towards males. A staggering 94.1% of contractors were male, while only 7.1% were female. The consultant group, making up 27.5% of the respondents, also exhibits a significant gender disparity. 100% of consultants were male. Although the percentage of female clients is slightly higher than that of female contractors, the overall trend suggests that the consulting field in housing projects is still largely male-dominated. In contrast to the contractor and consultant designations, the client group shows a more balanced gender distribution, although males still constitute the majority. 86.4% of clients were male, while 13.6% were female.

Table 4-1. Frequency distribution of the respondent's gender

Gender of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	5	7.2	7.2	7.2
	Male	64	92.8	92.8	100.0
	Total	69	100.0	100.0	

Source: own computation, May 2024

Table 4-2. Distributions of gender in the designated organizations

Respondent's designation * Sex of respondents Crosstabulation

Count

		Sex of respondents		
		Female	Male	Total
Respondent's designation	Contractor	2	26	28
	Consultant	0	19	19
	Client	3	19	22
Total		5	64	69

Source: own computation, May 2024

In terms of designations, the respondents were categorized into Contractors, Consultants, and Clients. Contractors constituted the largest group (40.6%), followed by Clients (31.9%) and Consultants (27.5%). This breakdown indicates a varied representation of professionals involved in housing projects, with contractors being the most prevalent group.

Table 4-3. Frequency distribution of respondent's designation

Respondent's designation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Contractor	28	40.6	40.6	40.6
	Consultant	19	27.5	27.5	68.1
	Client	22	31.9	31.9	100.0
	Total	69	100.0	100.0	

Source: own computation, May 2024

Education Background:

As it is presented in table 4-4 below, the research included respondents with varying levels of education. The majority of participants held a 1st Degree (79.7%), followed by those with a 2nd Degree (17.4%), and a smaller percentage with a Diploma (2.9%). This distribution indicates a well-educated sample, with a significant emphasis on individuals with at least a Bachelor's degree.

First-degree holders made up 82.1% of the contractor population, which comprised 40.6% of the respondents. By comparison, 28.6 percent of contractors had a second degree. This distribution shows that contractors place a high value on bachelor's degrees, with a significant minority having higher education. In the consultant group, comprising 27.5% of the respondents, 73.7% held a 1st Degree, while 2% possessed a 2nd Degree. Consultants predominantly held Bachelor's degrees, with a significant minority having advanced degrees. 31.9% of the respondents were clients, of whom 81.8% had a first degree and 13.6% a second. The bulk of the clientele held bachelor's degrees, and 14% of them had advanced degrees. This distribution shows that the clients have a good educational background, with a significant number holding advanced degrees.

Table 4-4. Respondents' education background

Respondent's designation * Education background Crosstabulation

Count

		Education background			
		Diploma	1st Degree	2nd Degree	Total
Respondent's designation	Contractor	0	20	8	28
	Consultant	0	14	5	19
	Client	2	17	3	22
Total		2	51	16	69

Source: own computation, May 2024

Relevant Work Experiences:

The study also examined the relevant work experiences of the respondents. The data revealed that a considerable portion of participants had above 5 years of experience

(71%), followed by those with 3-5 years of experience (23.2%), and up to 3 years of experience (5.8%). This distribution suggests a diverse range of experience levels among the respondents, with a notable presence of experienced professionals. When analyzing each parameter in the respondent designation, the following insights emerge: Contractors had the highest representation among the respondents (40.5%). The majority of contractors (53%) had above 5 years of relevant work experience, followed by those with 3-5 years of experience (32.1%), and up to 3 years of experience (14.3%). All contractors held either a 1st Degree (82%) or a 2nd Degree (14.3%) qualification. Consultants made up 27.5% of the respondents. 84% of consultants had above 5 years of relevant work experience. In terms of educational qualifications, 73.7% held a 1st Degree, and 26.3% held a 2nd Degree.

Clients accounted for 31.9% of the respondents. The majority of clients (81.8%) had above 5 years of relevant work experience, followed by those with 3-5 years of experience (18.2%). Among clients, 81.8% held a 1st Degree, 13.6% held a 2nd Degree, and 4.5% held a Diploma.

Table 4-5. Relevant work experiences of the respondents

Respondent's designation * Relevant work experiences Crosstabulation

Count

		Relevant work experiences			
		Up to 3 years	3-5 years	Above 5 years	Total
Respondent's designation	Contractor	4	9	15	28
	Consultant	0	3	15	19
	Client	0	4	18	22
Total		4	16	49	69

Source: own computation, May 2024

Generally, the demographics of the participants in the research study demonstrate the sample's diversity, with a considerable gender imbalance and a substantial majority of respondents possessing at least a bachelor's degree. The results emphasize the significance of taking these aspects into account while managing projects and making

decisions.

4.3. Monitoring Practices

A key component of project management is monitoring, which gives managers the ability to keep tabs on developments, spot possible problems, and make necessary adjustments to guarantee project success. Efficient oversight contributes to the timely, cost-effective, and high-quality completion of projects. Because housing projects are complicated, including many parties, different components, and stringent regulatory requirements, monitoring is especially crucial in this setting.

Monitoring is keeping a regular eye on and reporting on the status of a project, including financial, schedule, and quality performance measures. With the use of this data, project plan deviations are found and remedial action is taken to get the project back on track. Monitoring also assists in identifying possible hazards and areas for improvement, as well as ensuring adherence to legal standards.

The frequency of monitoring activities is a critical aspect of project management, as it determines how often project progress is tracked and reported. In the context of the Koye Feche housing project, the survey results as shown in table 4-7, indicate that the majority of respondents (50.7%) conduct monitoring activities on a weekly basis, while 21.7% do so bi-weekly. This suggests that monitoring is a regular and consistent practice in the project, with most stakeholders keeping a close eye on progress and performance. It is important to note that 24.6% of the respondents perform monthly bases, and just 2.9% do so on a quarterly basis. While most projects can get by with weekly to monthly monitoring, there may be some situations when more regular monitoring is required, especially in complicated projects with short timeframes or high-risk components. Project managers can lessen the chance of delays or cost

overruns by identifying and addressing problems in real-time with the aid of daily monitoring, for instance.

A number of reasons, including a lack of technology, resource limitations, or the conviction that weekly monitoring is adequate, could be the cause of the Koye Feche project's absence of daily monitoring. It is imperative to take into account the possible advantages of conducting more frequent monitoring, especially in domains with elevated risks or high stakeholder expectations.

Table 4-6. Frequency distribution of monitoring activities

Frequency of monitoring activity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weakly	35	50.7	50.7	50.7
	Bi-weakly	15	21.7	21.7	72.5
	Monthly	17	24.6	24.6	97.1
	Quarterly	2	2.9	2.9	100.0
	Total	69	100.0	100.0	

Source: own computation, May 2024

The study carried out to evaluate the frequency of progress meetings and monitoring activities is shown in Table 4-7. Progress meetings are held more frequently than activities linked to monitoring, according to Relative Importance Index (RII) values. The data indicates that while monitoring activities are carried out less frequently, with a RII of 0.449, progress meetings are held the most regularly, coming in at 0.572. This implies that progress meetings are prioritized over monitoring activities in the current scenario and are held more frequently.

As the Project Management Institute highlights in its PMBOK Guide, regular meetings encourage stakeholder collaboration and communication, guaranteeing project success and resolving complaints. Per the Project Management Institute (PMI) (PMI, 2021), however, continuous monitoring is as critical to the accomplishment of any project. On high-stakes construction projects, monitoring is usually done daily or nearly daily to

ensure quality control, timeliness, and safety. It appears that best practices are being followed, as evidenced by the constant monitoring observed in the housing project (PMI, 2021).

Table 4-7. Frequency of monitoring activities and progress meeting

Questions	Weakly	Bi-weakly	Monthly	Quarterly	RII	Ranks
Frequency of monitoring activities	35	30	51	8	0.449	2
Frequency of progress meeting	8	88	18	44	0.572	1

Source: own computation, May 2024

The attendees of progress meetings and their roles are also important factors in ensuring effective monitoring and control. The survey results indicate that project managers (25.0%) and contractors (36.8.0%) typically attend these meetings. This suggests that the project team is well-represented and that all stakeholders are informed and engaged throughout the project lifecycle

Table 4-8. Progress report meeting attendees

Meeting attendees

		Responses		
		N	Percent	Percent of Cases
Meeting attendees	Project manager	34	25.0%	49.3%
	Contractor	50	36.8%	72.5%
	Sub-contractor	28	20.6%	40.6%
	Gov. representatives	24	17.6%	34.8%
Total		136	100.0%	197.1%

Source: own computation, May 2024

Monitoring and managing the performance of housing projects requires the use of Key Performance Indicators (KPIs). According to survey results (table 4-9), a number of key performance indicators (KPIs) are tracked in relation to the Koye Feche housing project. These include quality assurance (25.2%), schedule adherence (31%), risk management (12.9%), cost performance (21%), compliance with regulations (7.1%),

and change control procedures (2.9%).

It seems that the most important task is keeping an eye on schedule adherence (31%), which is followed by quality assurance (25.2%) and cost performance (21%). This implies that the project team gives careful consideration to making sure the project stays on course and that the necessary quality standards are fulfilled. Schedule, quality, and cost receive more attention than risk management (12.9%) and regulatory compliance (7.1%), which are equally significant factors.

The Koye Feche project's cost performance monitoring looks to be below industry average when compared to worldwide procedures and standards. A study by the Project Management Institute (PMI) found that, on average, 25–30% of project management effort is devoted to cost control, making cost performance one of the most significant KPIs tracked in construction projects. A number of causes, including a focus on other goals, a lack of resources, or the conviction that other factors outweigh costs, could account for the Koye Feche project's comparatively weaker emphasis on cost monitoring (PMI, 2021).

According to international norms and regulations, the Koye Feche project's schedule adherence monitoring rate of 31% is acceptable. timetable performance is usually the second most significant KPI tracked in construction projects, according to the PMI study mentioned above, with an average of 30–35% of project management effort going toward timetable control. This implies that the Koye Feche project team is giving proper attention to making sure the project stays on course and that deadlines are fulfilled.

Additionally in line with international norms and procedures is the Koye Feche project's 25.2% quality assurance monitoring. With an average of 20–25% of project management effort going into quality control, quality is usually given top priority in construction projects. It looks that the Koye Feche project team is making the necessary

efforts to guarantee that the necessary quality standards are fulfilled and that any problems with quality are quickly discovered and fixed.

The Koye Feche project's monitoring of risk management (13%) and regulatory compliance (7.1%) is below international norms and practices. The PMI study states that although risk management and compliance receive 10–15% of project management effort, they are usually given less priority than cost, schedule, and quality. The Koye Feche project placed comparatively less attention on risk management and compliance, which could be attributed to a lack of funding, ignorance of these aspects' significance, or the conviction that other goals are more important.

Table 4-9. Key Performance Indicators monitoring

KPI indicators Frequencies

		Responses		
		N	Percent	Percent of Cases
KPI indicators	Cost performance	44	21.0%	65.7%
	Schedule adherence	65	31.0%	97.0%
	Quality assurance	53	25.2%	79.1%
	Risk management	27	12.9%	40.3%
	Compliance with regulations	15	7.1%	22.4%
	Change control process	6	2.9%	9.0%
Total		210	100.0%	313.4%

Source: own computation, May 2024

The recent survey conducted to assess the appropriateness of key performance indicators (KPIs) in various organizations has yielded significant insights into the current state of KPI usage. As it is presented in table 4-10, the majority of respondents (79.7%), according to the survey results, think that the Monitoring and Control System's description of the indicators and their suitability are at a moderate level. This shows that although the indications are generally appropriate, their selection and description may be more precise. A minor portion of participants (8.7%) believe that the indicators' suitability and explanation are below average. This suggests that a subset of the

stakeholders are dissatisfied with the indicators as they stand and feel that insufficient data is being collected to support oversight and management. Conversely, 11.6 percent of participants believe that the indicators' description and appropriateness are excellent. These encouraging comments imply that some stakeholders are content with the indicators as they stand and think they meet the project's requirements for monitoring and management.

Carefully choosing and characterizing pertinent indicators is a necessary part of designing Monitoring and Control Systems that work. Key performance indicators (KPIs) should be selected with consideration for stakeholder requirements and project objectives, according to PMI 2021. Indicators of project success should be quantitative, pertinent, and well-defined to facilitate effective monitoring and administration.

Table 4-10. Appropriateness of KPIs

KPIs Appropriateness of Indicators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Appropriate at low level	6	8.7	8.7	8.7
	Moderately appropriate	55	79.7	79.7	88.4
	Appropriate at high level	8	11.6	11.6	100.0
	Total	69	100.0	100.0	

Source: own computation, May 2024

The survey conducted on the application of digital technologies in the housing construction industry at the Koye Feche site of the Addis Ababa 20/80 housing project assessed various digital tools used for monitoring and controlling practices. The digital technologies evaluated included Building Information Modeling (BIM), drones, sensors, project management software, and other unspecified technologies. The survey utilized a Likert scale to measure the frequency of use, and the Relative Importance Index (RII) was calculated to rank these technologies (table 4-11). The results are summarized below:

1) Building Information Modeling (BIM) is a powerful tool that integrates multiple aspects of construction project management, including design, scheduling, and resource allocation. However, the survey results indicate that BIM is minimally utilized in the Koye Feche project, with all 23 respondents reporting minimal use. The RII for BIM stands at 0.078, ranking it fourth among the digital technologies assessed. This minimal use reflects a significant underutilization of BIM, suggesting that the potential benefits of enhanced collaboration and efficiency through detailed 3D modeling and simulation are not being fully realized in this project.
2) Drones are becoming more and more useful in building projects because of their ability to do tasks like site surveying, progress tracking, and inspection. Despite these benefits, just 2 out of the respondents to the Koye Feche poll indicated they utilized drones infrequently. Drones have a RII of 0.006, which puts them in fifth place overall. This sparse application emphasizes a lost chance to deploy airborne technology for more precise and effective site management and monitoring.
3) Because they provide up-to-date information on a variety of site circumstances, including as environmental elements and structural integrity, sensors are essential to modern construction. Like drones, all 65 respondents rated the Koye Feche project's usage of sensors as minimal, leading to a tied third position and a RII of 0.188. The project appears to be lacking in real-time data insights that might greatly improve site safety, efficiency, and decision-making processes based on the sparse usage of sensors.
4) Among the digital technologies assessed, project management software exhibits the highest usage frequency and importance. The responses vary, with 8 indicating high use, 26 moderate use, and 14 less use. This variation reflects a broader acceptance

and integration of project management software in the Koye Feche project. The RII for this technology is 0.455, ranking it first. This high level of use underscores the critical role of project management software in facilitating planning, scheduling, resource allocation, and communication among project stakeholders.

5) Other digital technologies include a range of tools that aren't particularly mentioned in the poll. There is variation in the frequency of use for various technologies; 4 respondents reported high use, 2 reported moderate use, and 57 reported minimum use. With a RII of 0.229, other technologies come in second in the rankings. This heterogeneity points to a patchy adoption of additional digital tools, possibly including less popular or newer technologies that haven't gained traction or shown their worth in the context of the project.

Table 4-11. the application of digital technologies

Digital Technologies	extensive use	highly use	moderate use	less use	Minimal use	RII	Ranks
BIM	0	0	0	4	23	0.078	4
Drone	0	0	0	0	20	0.058	5
Sensors	0	0	0	0	65	0.188	3
Project management software	0	32	78	28	17	0.449	1
Others	0	16	6	0	57	0.229	2

Source: own computation, May 2024

There is a glaring difference in the uptake and integration of cutting-edge tools, according to an analysis of digital technology usage in the Koye Feche housing project. Other technologies, including as BIM, drones, and sensors, are mostly underutilized, despite the fact that project management software is extensively used and acknowledged for its significance (EBCS, 2014). Potential areas for investment and improvement are indicated by this underutilization. A discrepancy between regional customs and international norms is shown by the Koye Feche site's sparing usage of these technology. It would probably take focused interventions like the following to close this gap:

- Training and Capacity Building: To give professionals the know-how to make the most of these technologies.
- Infrastructure investment: To enable the use and upkeep of cutting-edge digital tools.
- Policy and Regulatory Support: Promoting the use of digital technology by means of advantageous laws and financial rewards.

4.4. Quality Controlling Practices

The survey aimed to assess the controlling practices implemented in housing projects in Addis Ababa. The questionnaire was designed to capture various aspects of quality control (QC) practices, and the responses were analyzed to understand their prevalence and impact. The findings are summarized below based on the tabulated results:

1) Quality assurance procedures

Procedures for quality assurance are essential to preserving and raising the bar for building projects. These protocols and methodical activities are part of these procedures, which are intended to guarantee that each stage of the building process adheres to predetermined quality standards. A thorough survey was used to evaluate the adoption and application of quality assurance practices in the context of Addis Ababa housing developments.

The results of the poll (table 4-12) showed that 36 respondents, or 18.8% of the total, mentioned quality assurance measures. This suggests that among the projects surveyed, there was a moderate level of engagement with these procedures. Although the frequency of responses is relatively low, the impact of quality assurance methods is high, as seen by the 50.0% of situations where implementation was reported.

The implementation of quality assurance procedures in half of the surveyed cases

highlights their crucial role in the construction industry. These procedures typically involve a series of planned and systematic activities, including: Quality plans outline objectives, criteria, and responsibilities. Regular inspections and audits ensure compliance. Training enhances understanding, and personnel are certified.

Implementing quality assurance procedures in housing projects ensures compliance with regulatory standards, reduces legal and financial risks, and enhances project efficiency by minimizing errors and rework, saving time and resources, and ensuring project completion within budget and timeline. Quality assurance procedures ensure safety and durability of constructed buildings, enhancing satisfaction for end-users and stakeholders. Regular audits and inspections provide valuable feedback, refining construction processes and elevating quality standards for future projects.

Table 4-12. Quality control measure usually in place

QC measures

		Responses		
		N	Percent	Percent of Cases
Quality control	Quality assurance procedures	36	18.8%	52.2%
	Inspection checklists	67	34.9%	97.1%
	Material testing	56	29.2%	81.2%
	Nonconformance reporting	6	3.1%	8.7%
	Quality audits	16	8.3%	23.2%
	Quality control charts	11	5.7%	15.9%
Total		192	100.0%	278.3%

Source: own computation, May 2024

Inspection Checklists

Inspection checklists emerged as the most frequently utilized quality control practice, with 67 responses accounting for 34.9% of the total. These checklists are implemented in a remarkable 97.1% of cases, underscoring their critical role in the construction process. Inspection checklists provide a systematic approach to monitoring various aspects of construction, ensuring that each phase adheres to predefined standards. By

meticulously documenting inspections, these checklists help identify potential issues early, allowing for timely corrective actions. Their widespread use highlights their effectiveness in maintaining high-quality standards and preventing defects.

Material Testing

Material testing is another vital quality control practice, with 56 responses representing 29.2% of the total. This practice is implemented in 81.2% of the cases, reflecting its importance in verifying that construction materials meet required specifications. Material testing involves rigorous examination of materials such as concrete, steel, and soil to ensure they conform to quality and safety standards. By ensuring the integrity and durability of materials, this practice plays a crucial role in the overall safety and longevity of the constructed buildings. The high implementation rate signifies the industry's commitment to using reliable and compliant materials.

Nonconformance Reporting

Nonconformance reporting, despite its importance, is the least utilized practice, with only 6 responses accounting for 3.1% of the total. It is implemented in just 8.7% of cases. This practice involves documenting and addressing deviations from quality standards. The low frequency and implementation rate indicate a significant gap in systematic nonconformance management. Effective nonconformance reporting is essential for identifying defects, understanding their root causes, and preventing recurrence. Enhancing the adoption of this practice could lead to improved quality control and continuous improvement in construction processes.

Quality Audits

Quality audits are performed less frequently, with 16 responses, making up 8.6% of the total. These audits are implemented in 23.0% of the cases. Quality audits involve systematic examinations of project processes and outputs to ensure compliance with

established standards and identify areas for improvement. Despite their relatively low adoption, quality audits are crucial for maintaining accountability and transparency in construction projects. By identifying non-compliance and suggesting corrective actions, audits help in achieving consistent quality and fostering a culture of continuous improvement.

Quality Control Charts

Quality control charts are used by 11 respondents, representing 5.6% of the total. These charts are implemented in 15.9% of cases. Quality control charts are graphical tools used to monitor process variations and identify trends or patterns that may indicate quality issues. They are essential for statistical quality control and help in maintaining process stability. The low frequency and implementation rate suggest that this powerful tool is underutilized. Increasing the use of quality control charts could enhance the ability to monitor and control quality variations systematically, leading to better overall project outcomes.

The survey's findings demonstrate how differently Addis Ababa's housing projects have adopted quality control procedures. The widespread use of material testing and inspection checklists attests to their vital responsibilities in guaranteeing safety and compliance. On the other hand, there is room for improvement given the low adoption rates of quality audits, quality control charts, and nonconformance reports. Improving the way these procedures are applied could greatly increase the effectiveness and caliber of building projects.

Using all of these techniques in a more thorough approach to quality control will bring local initiatives into line with international best practices. In addition to ensuring sustainable development and increased stakeholder satisfaction, this will raise the standard and safety of housing projects. The Addis Ababa construction sector can reach

greater levels of excellence and dependability by filling in the deficiencies found in the survey.

Effective management of deviations from project plans is critical for the success of housing projects. The survey conducted to assess how such deviations are addressed in housing projects in Addis Ababa reveals diverse practices and their respective impacts. The findings provide valuable insights into the strategies employed to maintain control and ensure project success.

As it is presented in table 4-13, immediate corrective actions are taken in 34.8% of cases, addressing deviations promptly to minimize project timeline and quality impact. This proactive approach maintains continuous project control, preventing minor problems from escalating into major setbacks.

The study found that only 8.7% of respondents used the method of re-evaluating the project plan, indicating a preference for adhering to the initial plan and minimal changes unless absolutely necessary.

Stakeholder consultations are the most common method, used in 40.6% of cases, to collaboratively find solutions to deviations, promoting communication, cooperation, and diverse perspectives, enhancing transparency and trust among project participants. 13% of cases involve escalating issues to higher authorities for significant deviations requiring intervention. This approach ensures appropriate resolution but can slow down if higher authorities are not readily accessible or responsive.

The survey reveals a variety of approaches to address deviations from project plans in Addis Ababa housing projects, including immediate corrective actions, stakeholder consultations, limited revisions, and escalation to higher authorities for significant issues. The study emphasizes the significance of strategic and balanced deviation management methods for timely resolution, maintaining project quality, and achieving

successful outcomes in Addis Ababa housing projects.

Table 4-13. Deviation management from project plan and targets

Deviation from project plan addressed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Immediate corrective actions	24	34.8	34.8	34.8
	Revisions to project plan	6	8.7	8.7	43.5
	Stakeholder consultations	28	40.6	40.6	84.1
	Escalation to higher authorities	9	13.0	13.0	97.1
	None	2	2.9	2.9	100.0
	Total	69	100.0	100.0	

Source: own computation, May 2024

Compliance with Quality Standards

As it is presented in table 4-14, the analysis indicates that the housing project's quality control practices are highly effective in ensuring compliance with quality standards. The data shows a significant number of respondents rating the project as "Very effective," with a Relative Importance Index (RII) of 0.808, ranking it as the most important outcome. According to the survey, the housing project has been successful in lowering errors and rework, as indicated by the high percentage of respondents who rated it as "Somewhat effective." With a Relative Importance Index (RII) of 0.750, this outcome is ranked as the second most significant project component. Results also show that it has a good influence on customer satisfaction, as many respondents rated it as "Somewhat effective." Customer satisfaction ranks third among the study's outcomes, with a Relative Importance Index (RII) of 0.739.

The descriptive analysis's conclusions, in summary, offer insightful information about how well the housing project's quality control procedures are working. In the Addis Ababa housing industry, the project can improve its reputation and overall performance by putting more emphasis on customer happiness, eliminating faults and rework, and

maintaining quality standards.

Table 4-14. Effectiveness quality control practices ensuring outcomes

Outcomes	Very effective	Somewhat effective	Not very effective	Not effective at all	RII	Rank
	4	3	2	1		
Compliance with Quality standard	92	117	14	0	0.808	1
Reduction in rework and defect	56	138	8	5	0.750	2
Improved customer satisfaction	68	117	12	7	0.739	3

Source: own computation, May 2024

The survey's analysis on the effectiveness of communication in Addis Ababa's housing projects yields informative results regarding the involvement of stakeholders and the effectiveness of the communication structures in these projects.

According to the study results (table 4-15), most people think that the communication methods used in these condominium developments are at least moderately effective. 72.5% of the 69 respondents thought the communication techniques were somewhat effective. This implies that even if the current communication mechanisms are somewhat functional, they may be made more effective with some modifications. Only 24.5% of respondents said the communication methods were very effective, indicating that some people are not satisfied with how well the present practices inform and involve stakeholders throughout the project lifetime. Only 2.9% of the respondents, on

Table 4-15. Effectiveness of communications in the projects

Effectiveness of communications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not very effective	2	2.9	2.9	2.9
	Somewhat effective	50	72.5	72.5	75.4
	Very effective	17	24.6	24.6	100.0
	Total	69	100.0	100.0	

Source: own computation, May 2024

the other hand, said the communication methods were "not very effective," meaning that very few stakeholders feel noticeably misinformed or disengaged.

As it is presented in table 4-16, survey data reveals 37.6% of respondents in Addis Ababa face major challenges in housing development completion due to insufficient financial and logistical support. 13.5% of respondents reported a lack of skilled personnel and 16.5% of respondents reported inadequate technology or tools in the housing sector, leading to inefficiencies and project delays. 10% of respondents reported poor data collection and reporting, while 9.4% reported ineffective communication with stakeholders, emphasizing the need for robust data management and effective stakeholder collaboration. In the housing sector in Addis Ababa, 12.9% of respondents indicated a reluctance to change, implying that it could be difficult to adjust to new concepts and innovations, which could impede advancement and improvement. Addis Ababa faces challenges similar to global housing sector issues, including lack of resources, skilled personnel, and technological limitations, varying depending on local context and sector maturity.

Table 4-16. Major challenges of implementing monitoring and controlling activities

Major challenges Frequencies

		Responses		
		N	Percent	Percent of Cases
Major challenges	Lack of skilled personnel	23	13.5%	34.3%
	Inadequate technology or tools	28	16.5%	41.8%
	Poor data collection and reporting	17	10.0%	25.4%
	Ineffective communication with stakeholders	16	9.4%	23.9%
	Resistance to change	22	12.9%	32.8%
	Insufficient resources (budget, time, etc.)	64	37.6%	95.5%
Total		170	100.0%	253.7%

Source: own computation, May 2024

The impact of these challenges on the success of future housing projects in Addis Ababa can

be significant. The lack of resources, skilled personnel, and effective monitoring and control practices can lead to project delays, cost overruns, and suboptimal outcomes. This, in turn, can undermine the overall development of the housing sector and the ability to meet the growing demand for affordable and quality housing in the city.

4.5. Summary of the findings

The Koye Feche project in Addis Ababa exhibits significant underutilization of digital technologies, including Building Information Modeling (BIM), drones, sensors, and project management software. BIM, in particular, is minimally utilized, indicating a missed opportunity for enhanced collaboration and efficiency through detailed 3D modeling and simulation. Similarly, drones and sensors are underutilized, suggesting a lack of real-time data insights that could improve site safety, efficiency, and decision-making processes.

The survey also revealed that although most participants thought key performance indicators (KPIs) were quite suitable, there was still space for improvement in terms of both their description and selection. Although weekly monitoring is sufficient, more frequent monitoring may be necessary, particularly in high-risk sectors.

Communication methods are somewhat effective, but there is room for improvement. The study highlights several challenges in the housing sector, including insufficient financial and logistical support, lack of skilled personnel, inadequate technology or tools, poor data collection and reporting, and ineffective communication with stakeholders. These challenges can lead to project delays, cost overruns, and suboptimal outcomes.

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATIONS

This chapter presents the conclusions drawn from the study on the monitoring and control practices of housing projects in Addis Ababa, with a particular focus on the Koye Feche site. The objective of the research was to assess these practices, identify areas for improvement, and provide recommendations for enhancing project oversight. To address the research questions, a quantitative research design was utilized, and the data collected from respondents through questionnaires were analyzed descriptively.

5.1. CONCLUSION

The study found that the monitoring and control practices in housing projects in Addis Ababa are generally inadequate, leading to significant delays and cost overruns. Ineffective communication among stakeholders, inadequate quality control measures, and a lack of regulatory compliance emerged as major challenges. These issues are particularly pronounced at the Koye Feche site, where projects have been plagued by delays and financial difficulties.

The findings of the study align with its research objectives, which sought to assess the state of monitoring and control practices in housing projects and offer recommendations for improvement. The key findings are summarized as follows:

Monitoring Practices:

The research findings indicate notable limitations in the oversight of Addis Ababa housing projects, specifically at the Koye Feche location. Monitoring is sometimes limited to site inspections and progress reports, which is insufficient to guarantee on-time completion and uphold quality control. According to the respondents, a lack of

stakeholder involvement and insufficient resources typically obstruct these monitoring attempts.

The Relative Importance Index (RII) results indicated that the frequency of progress meetings is higher than that of the activities that are directly related to monitoring. Monitoring is usually carried out daily or almost daily in high-stakes construction projects to make sure that safety regulations, schedules, and quality control are followed. In contrast to international protocols and regulations, the Koye Feche project's cost performance monitoring is below industry average. In addition, even though some activities require daily monitoring to accurately track project progress, over 50% of the monitoring activities were carried out on a weekly, bi-weekly, or monthly timeline.

Quality Control:

The study found that quality control measures in housing projects are inadequate, resulting in substandard construction and delays. Respondents indicated that quality control is often compromised due to pressures to meet deadlines and budget constraints. Although the impact of quality assurance methods is high, their implementation frequency is relatively low.

The study revealed that nonconformance and quality audit management are the least utilized practices. This low utilization rate indicates a significant gap in managing nonconformance and conducting quality audits. Furthermore, the use and implementation of the powerful tool of quality control charts were found to be minimal. There is substantial room for improvement in adopting quality audits, quality control charts, and nonconformance reports to enhance overall project quality and adherence to standards.

Regulatory compliance has emerged as a significant challenge in the housing projects

of Addis Ababa, with respondents frequently reporting non-compliance with municipal ordinances and building regulations. Despite the extensive use and recognition of project management software, other advanced technologies such as BIM, drones, and sensors are largely underutilized. The Koye Feche site's limited use of these technologies highlights a discrepancy between regional practices and international norms.

Addis Ababa faces challenges similar to those encountered in the global housing sector, including a lack of resources, skilled personnel, and technological limitations. These challenges vary depending on the local context and the maturity of the sector.

The study's findings on communication methods in condominium developments present a mixed picture. While many respondents find the current practices somewhat effective, the existence of both satisfied and dissatisfied stakeholders indicates a need for ongoing improvement and refinement of communication strategies. Overall, the study underscores the importance of addressing these challenges to enhance the effectiveness and efficiency of housing project management in Addis Ababa.

5.2. RECOMMENDATIONS

The findings of the research highlight several critical areas that require attention and improvement. Based on these insights, the following recommendations are proposed to enhance the effectiveness of these practices and ensure the successful completion of housing projects in the city.

1. Strengthening Resource Allocation

Increased funding for the housing industry is crucial to prevent delays and ensure projects are completed efficiently, with government agencies and stakeholders prioritizing funding and hiring qualified individuals.

2. Enhancing Stakeholder Communication and Collaboration

Improved communication protocols, regular progress meetings, and a unified infrastructure are essential for reducing delays and cost overruns by promoting real-time information sharing and problem resolution.

3. Implementing Advanced Monitoring Technologies

Implementing advanced project management software and digital construction techniques like Building Information Modeling (BIM) can enhance technology usage, provide real-time data, and improve problem detection (EBCS, 2014).

4. Improving Data Collection and Reporting Mechanisms

In order to enhance project results, standardize data collection techniques, employ digital tools, carry out routine audits, and provide staff with proper reporting training to guarantee data dependability and integrity.

5. Enhancing Quality Control Measures

Project results can be enhanced by putting strict quality control procedures into place, carrying out frequent audits, utilizing statistical tools, and encouraging a quality culture within project teams.

6. Fostering a Culture of Adaptability and Innovation

To keep updated with industry practices and technology and to improve project management efficiency, the housing sector must cultivate a culture of innovation and adaptation.

7. Ensuring Regulatory Compliance

Create a compliance team within the project management office to oversee operations, secure permissions, and provide project staff with legal adherence training.

REFERENCES

Adamu, Z. Y. (2012). Institutional Analysis of Condominium Management System in Amhara Region: The Case of Bahir Dar City. African Review of Economics and Finance, 3(2), 13-48.

Addis Ababa City Government. (2018). "Addis Ababa Integrated Housing Development Program."

Ahmed Ali (2019) An Assessment of the Project Planning Practices of Addis Ababa Housing Project.

AHURI. (2002). Housing policy and sustainable urban development: Evaluating the use of local housing strategies in Queensland, New South Wales and Victoria. AHURI Positioning Paper No. 41.

Amare Tilahun et al. (2022) "Assessment of Risk Factors on Construction Projects in Gondar City, Ethiopia."

Birhanu, D., & Bazezew, B. (2021). Factors Affecting the Successful Implementation of Condominium Housing Projects in Addis Ababa, Ethiopia. International Journal of Construction Engineering and Management, 10(1), 1-10.

Chan et al. (2004), Key performance indicators for measuring construction success, Benchmark international journal, Vol 11, No 2.

Chan, A., Scott, D., & Chan, Ada. (2004). "Factors Affecting the Success of a Construction Project." Journal of Construction Engineering and Management.

Chua, D.K.H., Kog, Y.C., & Loh, P.K. (1999). Critical Success Factors for Different Project Objectives, Journal of Construction Engineering and Management, Vol 125, No 3,

Delgado, J.M.D., Oyedele, L., Ajayi, A., Akanbi, L., Akinade, O., Bilal, M., & Owolabi, H. (2019). "Robotics and Automated Systems in Construction.

Descriptive Research: Design, Methods, Examples, and FAQs. (2023). Retrieved from https://dovetail.com/research/descriptive-research/.

Dey, I. (2004). "Benchmarking Project Management Practices of Caribbean organizations using analytic hierarchy process.", Bencmark international journal, Vol 9, No 4.

Dieleman, F., & Everaers, P. (1994). "From Renting to Owning: Life Course and Housing Market Circumstances." Housing Studies, 9, 11-26.

Duncan (2020). "Critical Success Factors Affecting Performance Of Housing Projects In KACYIRU."

Durdyev, S., & Ismail, S. (2012). "Role of the Construction Industry in Economic Development."

Ethiopian Economic Association (EEA). (2018). Working Paper: Ethiopian Construction

Industry: Current Status and the Way Forward. Retrieved from https://eea-et.org/wpcontent/

uploads/2018/06/Working-Paper-01-2018.pdf

Farber, H.S. (2012). "Unemployment in the Great Recession: Did the Housing Market Crisis Prevent the Unemployed from Moving to Take Jobs?" American Economic Review, 102, 520-52.

Gebremedhin Sebsibe (2019) "Assessment of Project Management Practices of Public Housing Authorities in Addis Ababa; Ethiopia."

Habitat for Humanity. (2021). The global housing crisis. https://www.habitat.org/costofhome/2020-state-nations-housing-report-lack-affordable-housing.

Hawke's Bay Regional Council. (2016). Literature Review – Urban Growth and Land Use. HBRC Report No. SD 16-01.

He Li, Xiaoxuan Liang, (2021), Responses of Housing Price under Different Directions of Population Change: Evidence from China's Rust Belt, Chinese Geographic Science.

Ibbs, C.W., & Kwak, Y.H. (2004). "Project Management Process Maturity Model, Journal of management in engineering, Vol 18, No 3.

Jemima Yarnold, Saeed Banihashemi, (2021). Building and Construction Quality: Systematic Literature Review. ResearchGate.

Keller, E. J., & Mukudi-Omwami, E. (2017). Pro-poor housing in Addis Ababa, Ethiopia. African Review, 44(1), 179-196.

Khalid Mhmoud Alzubi, (August 2023). Automated monitoring technologies and construction productivity enhancement: Building projects case, Ain Shams Engineering Journal, Volume 14, Issue 8, August 2023, 102042.

Kerzner, H. (2004). "Project Management Maturity Model." https://doi.org/10.1002/9780470172391.ch49

Kerzner, H. (2017). Project management: a systems approach to planning, scheduling, and controlling. John Wiley & Sons.

Louise Doyle, 2019. An overview of the qualitative descriptive design within nursing research, Journal of research on bursing, v.25(5).

Lukasz Mazur, 2022. Evaluation of the Quality of the Housing Environment Using Multi-Criteria Analysis That Includes Energy Efficiency: A Review, Energy, Vol. 5, Issue 20, https://doi.org/10.3390/en15207750.

Mengistu HS (2023) Assessment of Project Management Practices of Public Housing Authorities in Addis Ababa; Ethiopia.

MWUD (Ministry of Works and Urban Development), 2008 and 2009 report, Addis Ababa Ethiopia

Mok, K. Y., Shen, G. Q., & Yang, J. (2015). Stakeholder management studies in mega construction projects: A review and future directions. International Journal of Project Management, 33(2), 446-457.

Project Manager (2023). "Project Monitoring and Control: Tools & Steps." Retrieved from https://www.projectmanager.com/blog/project-monitoring-and-control. Engineering, Volume 13, pages 1–35,

ProjectManager. (January 2023). What Is the Project Life Cycle? - ProjectManager. Retrieved from https://www.projectmanager.com/blog/what-is-the-project-management-life-cycle.

Rhode Island College Digital Publishing. "Quantitative Analysis with SPSS: Getting Started – Social Data Analysis." Retrieved from https://pressbooks.ric.edu/socialdataanalysis/chapter/gettingstarted/

Saaty, T. (2004). "Analytic Hierarchy Process.", Journal of Systems Science and Systems.

Schiltz, J. (2004). "Financial Benefits of Project Management.

Stephen Hwang, 1999. Housing and Population Health: A Review of the Literature, Cleveland State University.

Teshome, T., & Mekonen, A. (2020). Assessment of Monitoring and Control Practices in Addis Ababa Housing Projects. International Journal of Construction Engineering and Management, 9(1), 1-10.

Zawya (2020). "Saudi Arabia's Real Estate and Infrastructure Projects."

UNECE, 2010. Measuring Population and Housing, Practices of the UNECE countries in the 2010 round of census, https://unece.org/fileadmin/DAM/hlm/archive/Key%20note%20population%20and%20housing.pdf

United Nations. (2018). 2018 revision of world urbanization prospects. https://www.un.org/development/desa/publications/2018-revision-of-world-urbanization-prospects.html

UN-HABITAT (2010) The Ethiopia Case of Condominium Housing: The Integrated Housing Development Programme. United Nations Human Settlements Programme: Nairobi.

World Resources Institute. (2017). Confronting the Urban Housing Crisis in the Global South - Land Portal. https://data.landportal.info/ru/library/resources/confronting-urban-housing-crisis-global-south-adequate-secure-and-affordable.

ANNEX: Questionnaire

Questionnaire:

Assessment of Monitoring and Control Practices in Addis Ababa Housing Projects, particularly focusing at Koye Feche site.

Introduction:

Hello Dear Respondents, my name is Mamo Methe and I am a final year postgraduate student at Addis Ababa University, College of Business and Economics, School of Commerce, Department of Project Management. I am currently working on my final year project, which aims to assess the monitoring and control practices in the Addis Ababa housing project at the Koye Feche site (Project 7).

Please take a few moments to provide the following information. This information will be used for academic purposes only, and your responses will be kept anonymous and confidential. Your support and participation in this research project are greatly appreciated and will contribute to the successful completion of my study. Please answer the following questions to the best of your knowledge and experience.

Sincerely yours

Mamo Methe

Section 1: Project Information

1.1. Project Name: _____

1.2. Location of the Project: _____

1.3. Type of Housing Project (e.g., 20/80 condominium, 40/60 scheme, government-sponsored, private development, etc.):

_____

Section 2: Demographic Information

Please mark in one of the check boxes corresponding to your preferred response and use the blank spaces to write down your possible responses.

2.1. Name of organization (optional):

_____

_____

2.2. Gender:

☐ Male ☐ Female

2.3. Respondent's designation

☐ Client ☐ Consultant ☐ Contractor

2.4. Education background

☐ Diploma ☐ 1st Degree ☐ 2nd Degree (Masters)

2.5. Relevant work experiences (years)

☐ Up to 3 years ☐ 3-5 years ☐ Above 5 years

2.6. Years of Experience in Project Management: _____

2.7. Number of project(s) involved:

☐ Up to 3 projects ☐ 3-5 projects ☐ Above 5 projects

Section 3: Monitoring Practices

3.1. How frequently does monitoring activities conducted on the project?

☐ Weakly

☐ Bi-weakly

☐ Monthly

☐ Quarterly

☐ Other (please specify): _____

3.2. How frequently are project progress meetings conducted?

☐ Daily

☐ Weekly

☐ Bi-weekly

☐ Monthly

☐ Other (please specify): _____

3.3. Who typically attends these progress meetings?

☐ Project Manager

☐ Contractors

☐ Sub-contractors

☐ Government representatives

☐ Other stakeholders (please specify): _____

3.4. Performance Indicators are used to provide benchmarks for demonstrating the achievements of a project. What key performance indicators (KPIs) are monitored during project progress meetings? (Check all that apply)

☐ Cost performance

☐ Schedule adherence

☐ Quality assurance

☐ Risk management

☐ Compliance with regulations

☐ Change control processes

☐ Other (please specify): _____

3.5. Selecting and describing appropriate indicators is one of the most critical steps in designing Monitoring and control system. How do you rate the appropriateness of selected and the level of their description?
(Please mark the appropriate answer, 1=Poorly appropriate, 2= Appropriate at low level, 3=Moderately appropriate, 4=Appropriate at high level).

☐ 1 ☐ 2 ☐ 3 ☐ 4

3.6. To what extent does your organization use the following digital technologies (e.g. Building Information Modeling (BIM), software, tools, drones, sensors) to monitor project progress?
(Please mark the preferable answer, 1= minimal use, 5= extensive use

	1	2	3	4	5
BIM	☐	☐	☐	☐	☐
Drones	☐	☐	☐	☐	☐
Sensors	☐	☐	☐	☐	☐
Project management software	☐	☐	☐	☐	☐
Other digital technologies (specify):	☐	☐	☐	☐	☐

3.7. How often does your organization conducted the following monitoring activities? Please mark corresponding check box.

	Daily	Weakly	Monthly	As needed
Project status reporting	☐	☐	☐	☐
Site inspection / site visits	☐	☐	☐	☐
Schedule tracking	☐	☐	☐	☐

Cost monitoring	☐	☐	☐	☐

Section 4: Control Practices

4.1. How are deviations from project plans and targets addressed?

☐ Immediate corrective actions

☐ Revisions to project plans

☐ Stakeholder consultations

☐ Escalation to higher authorities

☐ Other (please specify): _____

4.2. Is there a formal change management process in place to handle scope changes?

☐ Yes ☐ No ☐ Not sure

4.3. How are project risks identified and managed?

☐ Risk register

☐ Risk assessment workshops

☐ Risk mitigation plans

☐ Risk response strategies

☐ Other (please specify): _____

4.4. What quality control measures does your organization have in place for housing projects? (Check all that apply)

☐ Quality assurance procedures

☐ Inspection checklists

☐ Material testing

☐ Nonconformance reporting

☐ Quality audits

☐ Quality control charts

☐ Other quality control measures (please specify): _____

4.5. How effective are your organization's quality control practices in ensuring the following project outcomes? where 1 = Not effective at all, 2 = Not very effective, 3 = Somewhat effective, & 4 = Very Effective, please mark the check box

	1	2	3	4

Compliance with quality standards	☐	☐	☐	☐
Reduction in rework and defects	☐	☐	☐	☐
Improved customer satisfaction	☐	☐	☐	☐

4.6. What communication methods does your organization use to share project information with stakeholders? (select all that apply).

☐ Regular progress meeting

☐ Email updates

☐ Project website or portal

☐ Social media channels

☐ Printed reports and newsletters

☐ Others (please specify): _____

4.7. How effective are your organization's communication practices in keeping stakeholders informed and engaged throughout the project lifecycle?
where 1 = Not effective at all, 2 = Not very effective, 3 = Somewhat effective, & 4 = Very Effective.

☐ 1 ☐ 2 ☐ 3 ☐ 4

Section 5: Overall Assessment

5.1. On a scale of 1 to 4, please rate the effectiveness of monitoring and control practices in ensuring the following project outcomes in your housing project.
where 1 = Not effective at all, 2 = Not very effective, 3 = Somewhat effective, & 4 = Very Effective.
Please mark in the check box

	1	2	3	4
Meeting budget targets	☐	☐	☐	☐
Adhering to schedule	☐	☐	☐	☐
Achieving quality standards	☐	☐	☐	☐

5.2. What are the major challenges faced in implementing monitoring and control practices for housing projects in Addis Ababa (for instance Koye Feche site)? (Check all that apply).

☐ Lack of skilled personnel

☐ Inadequate technology or tools

☐ Poor data collection and reporting

☐ Ineffective communication with stakeholders

☐ Resistance to change

☐ Insufficient resources (budget, time, etc.)

☐ Other (please specify): _____

5.3. Do you have any suggestions for improving monitoring and control practices in future housing projects?

_____

_____

_____.

5.4. What are in your opinion the two strongest and weakest points of monitoring and control practices of the housing projects generally at Koye Feche (Project 7)?

_____

_____

_____

_____.

5. 5. Additional Comments

- Please provide any additional comments or insights regarding the monitoring, control, and quality control systems in this housing project.

_____

_____

_____.

Thank you for completing the questionnaire!

This questionnaire template was modified based on insights from literature on project management practices (Kerzner, 2017; Project Management Institute, 2017) and relevant research on monitoring and control in housing projects (Teshome & Mekonen, 2020; Birhanu & Bazezew, 2021). Adjustments were made to tailor the questions specifically to the context of assessing monitoring and control practices in Addis Ababa housing projects.