Addis Ababa University

College of Technology and Built Environment

School of Civil & Environmental Engineering

Graduate Program Construction Technology & Management

A Study on the Performance of Housing Projects: A Post Project Evaluation of Branch Two 40/60 Housing Projects in Ethiopia.

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements for the Degree of Master of Engineering in Civil Engineering

(Construction Technology and Management)

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STATEMENT OF CERTIFICATION

This is to certify that Helen Woldeselassie has carried out this project work on the topic entitled A Study on the Performance of Housing Projects: A Post Project Evaluation of Branch Two 40/60 Housing Projects in, Ethiopia under my supervision. This work is original in nature and it is sufficient for submission for partial fulfillment of the Requirements for the Degree of Master of science in civil Engineering (Construction Technology and Management).

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DECLARATION

I, who have signed below, would like to state that the research project is unique and not previously been submitted for a Degree at any other university. Every source of information used in the thesis has been properly recognized.

Name: Helen Woldeselassie

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Date: _____

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Table of Contents

ABSTRACT

Integrated Housing Development Program was created as part of the nation's economic development strategy, In order to boost local companies, encourage the use of locally produced building materials, and provide job opportunities. The 40/60 housing scheme is one of the initiatives. The Addis Ababa city administration started the 40/60 saving housing project at reasonable costs for middle-class city citizens in order to address the housing issue. The country's largest city Addis Ababa, is home to a sizable population, and it is anticipated that this population will continue to grow in the near future. This has occasionally led to an increase in the demand for housing, which has resulted in the most complex socioeconomic issues in the city. Since 2013, the IHDP lottery registration system has been inaccessible to new applicants, as there is a waiting list that currently stands more than 800,000. Additionally, previously scheduled IHDP construction developments have been postponed.Ex post evaluation is an assessment technique that emphasizes the project's long-term results. The lack of a system for evaluating building performance is one of the causes for our inability to obtain crucial data on our buildings, which leads to reoccurring errors and ineffective projects. Project assessment can be helpful in demonstrating openness and accountability as well as in allowing lessons learned to be shared in the construction of knowledge and expertise. In this regard this research is conducted to evaluate the performance of the 40/60 housing projects. Beside observed information this research identify and analyse data to determine the performance of the housing projects, to identify the underperformance areas in the housing projects, to investigate factors contributing to underperformance of the housing projects and to identify the post occupation issues or defects of the housing projects.The data is collected from customers, brokers and employees of the organization that are involved in the building construction projects through an interview, questioner , project reports and documents. The housing projects under this research construct in total of 14,724 houses and 4932 shops. Among these buildings 158 of them are delivered and 7,963 numbers of keys are transferred to the owners. In total 737 people benefited from this project employment opportunity and among them 139 of them are women. This projects helps landlords in creating wealth And also help as an option for the peoples who can't afford the rent and the cost of real-estate apartments. However there is a difference between the number of blocks constructed and transferred, there is also price increment on the buyers in each round which makes accountability and affordability of these condominium houses questionable and also Water leakage, dampness and mold growth are among the common quality problems observed in these projects. Delayed design, delayed contractor payments and time estimates that are unrealistic compared to the actual work are some of the reason mentioned for the observed delays. And the reasons for the difference in quantity among the materials given to the contractor by the government and actual consumption were the standard being not prepared back then, due to inefficient uses of material by contractors, in some cases due to robbery issues and also the change in supervisor in different times from the client side causing a gap in information.

Key Words: performance, housing project, post occupation, 40/60housing program, cost, quality, material consumption.

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AAHDC	Addis Ababa Housing Development Corporation
ADRRI	Africa Development and Resources Research Institute
BAA	British Airport Authority
CSA	Central Statistical Agency
CPF	Central Provident Fund
HCB	Hollow Concrete Block
IHDP	Integrated Housing Development Program
ILO	International labor organization
KPI	Key Performance Indicators
MUDHC	Ministry of Urban Development, Housing and Construction
PIR	Post-Implementation Review
PMA	Project Management Association
PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
POE	Post Occupancy Evaluation
US	United States of America
UN DESA	United Nations Department of Economic and Social Affairs

CHAPTER 1
INTRODUCTION

1.1 Background of the Study

Program according to (PMI, 2008) is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. According to PMBOK (2013), a project is an undertaking in which material, financial, and human resources are arranged in a novel way to carry out a specific scope of work within time and cost constraints in order to achieve positive change as defined by quantitative and qualitative objectives. The information system at the center of the performance management process is the performance measuring system. Project performance, according to Ali et al. (2018), is the degree to which project outputs and outcomes meet operational and technical requirements, budgetary goals, schedule goals, and, ultimately, the client's business needs. According to the ILO (2021), a poor evaluation process is a missed chance for everyone to learn and apply the information to do better. Project assessment can be helpful in demonstrating openness and accountability as well as in allowing lessons learned to be shared in the construction of knowledge and expertise.

Ex post evaluation, according to Ngacho and Das (2014), is an assessment technique that emphasizes the project's long-term results. The majority of ex post evaluation criteria are based on a social time perspective. They also admit that one of the main characteristics of these criteria is their high degree of subjectivity, which means that there is no universally accepted definition of what these criteria are or a mathematical tool to quantify them. According to Izran (2008), many working in the construction sector are not interested in doing post-occupancy assessments of building performance. This results in the creation of buildings that fall short of the performance standards set by stakeholders, the recurrence of similar errors in subsequent building designs and the destruction of the possibility of ongoing building performance improvement.

In Ethiopia the concept of Condominium housing as a separate form of ownership was not familiar until 2003 (MUDHC, 2005 E.C). In 2005, the government of Ethiopia considering provision of houses as one of the major developmental tasks to reducing poverty and improving the livelihoods of slum dwellers; and thereby bringing sustainable socio-economic development, established a National Integrated Housing Development Program under the then Ministry of works and Urban Development (MWUD) later renamed as the Ministry of Urban Development, and Construction (UNHABITAT, 2010).

The 40/60 housing scheme is one of the initiatives that aims to construct condominiums. The city administration started the 40/60 saving housing project at reasonable costs for middle-class city citizens in order to address the housing issue (Yared, 2016). The project is unique in that, in addition to meeting the residents' housing needs, it aims to improve the city's reputation as part of its improving effort.

When the program started people who were enrolled for the 40/60 housing program paid more than the 40 percent which is more than what is required showing the demand for the homes. The country's largest city, Addis Ababa, is home to a sizable population, and it is anticipated that this population will continue to grow in the near future. This has led to an increase in the demand for housing, which has resulted in the most complex socioeconomic issues in the city.

1.2 Problem Statement

Project evaluation, according to Omid and Gustavo (2018) is a multifaceted process since projects differ in terms of size, industry, resource availability and specific objectives. They also need to be tailored to the particulars of their context, particularly when changes take place over time. Drawing lessons and conclusions for future project planning and implementation is the primary objective of post-project evaluation, according to Kifle (2023).

The Central Statistical Agency of Ethiopia (CSA) forecasts that the urban population would reach 42.3 million by 2037, rising at a pace of 3.8% year, but the World Bank (2015) projects that the urban population will raise at a higher rate of 5.4% annually. This rapid urban growth will result in a significant increase in the number of urban people and strain the government's already meager attempts to meet the demands of the growing urban populations. According to 2015 estimates, Ethiopia will have approximately 4 million new urban households by 2027 and 9.7 million by 2037. There will be a demand for 471 000 urban houses per year from 2015 to 2025 and for 486 000 houses per year from 2025 to 2035(Kihato and Gitu, 2021).

According to UNHABITAT (2010), the condominium housing programs are financed by the regional states and City Administrations budget. The Regional State Governments and City administrations issue bonds to the Commercial Bank of Ethiopia which is the major source of Finance for condominium housing construction projects. Other source of finance is the down payment collected from condominium lottery winners. Many of these projects started in 2013 However, finished projects are sent to users inefficiently and with a delay. According to (Matsumoto and Crook, 2021) The IHDP's lottery registration system has been closed to newcomers since 2013, as the waiting list is estimated at 800 000 and some projects have been put on hold.

The lack of a system for evaluating this housing projects performance can be mentioned as one of the reasons for not obtaining crucial data about the performance of the projects, which in return lead to reoccurring of errors and ineffective projects. Addis Ababa condominium housing projects are one of the building projects impacted by this, since most of the projects seem to have common performance issues more research is required to determine the performance of the housing project in the final stage so that it could be used as source of information for similar projects so that the same mistakes cannot reoccur. More in-depth investigation was done in this study In order to better understand the performance of the projects under branch two 40/60 housing projects.

1.3 Research Questions

- What are the different types of housing loan program in Ethiopia?
- How are the housing projects performing against their intended goals?
- How are the underperformances of the housing projects affecting the customers or the beneficiaries in post occupancy?
- What are the best alternative methods to control or minimize the underperformances of the housing projects?

1.4 Objective of the Study

The objective of this research is discussed as main and specific objective below:

1.4.1 General Objectives

The overall objective was to assess the performance of housing projects using post project evaluation specifically to Branch Two 40/60 Housing Projects in Ethiopia.

1.4.2 Specific Objective

- To assess the performance of the housing projects.
- To identify the underperformance areas in the housing projects.
- To investigate factors contributing to underperformance of the housing projects.
- To identify the post occupation issues or defects of the housing projects.

1.5 Scope of the Research

Although the IHDP is available in different parts of Ethiopia, this research project only focused on post project evaluation of Branch Two 40/60 Housing Projects in Ethiopia specifically with respect to its performance because this project contains seven sites under it, it means it is a good representative of the entire current housing projects in Ethiopia specifically for projects under provisional stage.

1.6 Significance of the Research

Housing is clearly important for everyone's health and quality of life, and it has significant economic, social, cultural, and personal implications. Examining and assessing the extent to which the investment project or activity has produced the intended outcomes was the primary goal of this review. Along with identifying the project's possibilities, threats, vulnerabilities, and strengths, the evaluation also analyzed and compiles the information to help ensure accountability. Additionally, it will assist future projects with management level decision making and offer information on services for enhancing completed projects, modifying ongoing projects and directing future initiatives.

1.7 Limitation

The availability of accurate and comprehensive data on budgeting for branch two housing projects was one of the limitations. It was challenging to access detailed financial information because the budgeting information for housing projects is considered confidential or sensitive. Biased answers regarding customer opinions was another one, Customers who choose to participate in questionnaires may not be representative of all customers, which will lead to bias. For example, those with particularly positive or negative experiences may be more motivated to participate; skewing the results and also Customers may have a vested interest in the success or failure of the housing project, potentially leading to biased responses that align with their personal interests, this was the reason behind the limited sample size in this research.

1.8 Sections of the Thesis

This study paper is organized into five chapters. Each chapter focuses on the below points as follows:-

The first chapter provides the introductory aspect of the study which encompasses the background of the study, statement of the problem, the research question, objective of the study, significance of the study, scope of the study and limitation of the study.

The second chapter explores the related literature on the subject matter: - From the available literature, this chapter composed an overview of the definition of what project, project lifecycle, project management, project performance and its measurement means. It also includes the overall housing concept, housing deficit, housing stock along with the history of integrated housing project and its performance.

Chapter three explains method / methodology:-This chapter gives an overall view of research methodology for the research such as the method of data collection and the method of data analysis.

Chapter four presents the data analysis:-This chapter focuses on analyzing collected data and discussing the findings. It contains the analysis of the information gathered through the questionnaire, interview and document reviews. It identifies the performance of the housing projects under these sites along with its underperformances, the factors contributing to the underperformances along with the observed defects in post occupation level.

The last chapters deal with a conclusion and recommending a solution.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

In this literature review concept of program, project and project lifecycle, project management and project performance, what a successful project means and what project performance evaluation means its timing with its criteria and methods of evaluation are presented. In addition, the challenges and the importance of project performance evaluation, the concept of housing projects and our country experience with other countries are reviewed.

2.2 Program

The definition of a program given in (PMI, 2008) is a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually. Programs may contain elements of work outside of the scope of the discrete projects in the program. Program is a portfolio of projects and activities that are coordinated and managed as a unit such that they achieve outcomes and realize benefits (OGC, 2003).

2.3 Project

According to the Cambridge Dictionary, a project is a planned task or activity that is finished over time with the intention of achieving a specific goal. A project, according to (William, 2023), is a group of tasks that must be completed within a specific time frame in order to meet a set of goals. The group in charge of carrying out these tasks is known as the project team, and it is supervised by a project manager who is in charge of successfully planning, organizing, overseeing, and wrapping up projects.

According to PMBOK (2013), a project is a short-term endeavor initiated with the goal of generating a unique product, service, or result. The transient nature of projects implies that they have a distinct beginning and end. A temporary endeavor is one in which the organization will only last until the new state is attained, at which point it will dissolve. We can use people, materials, money, or all three as the resources we gather to complete our mission.

William, (2023) states a building or other constructed asset, like a tunnel or bridge, is constructed through a planned process called a construction project, which is also sometimes simply called a project. Deliverables from the construction project include infrastructure, high-rise towers, private facilities (such as homes, offices, or retail buildings), public facilities (such as highways, bridges, dams, etc.) and service facilities (such as medical centers, educational campuses, or train stations). Construction projects are inherently risky and complex due to the variety of project sites, the pressure to finish the work within the allocated budget and time, the involvement of multiple participants with different goals and the constantly evolving complexity of construction techniques according to (Silva et al, 2016).

2.4 Project Life Cycle

Every project has three stages, according to Merrie Barron et al. (2022) the beginning, the middle phase (when projects are moved closer to completion), and the end phase (whether successful or not). Additionally, they show that a typical project has four primary stages: initiation, planning, implementation, and closure. Each stage has its own set of duties and issues. Together, these phases form the project life cycle, which illustrates the path a project takes from inception to completion.

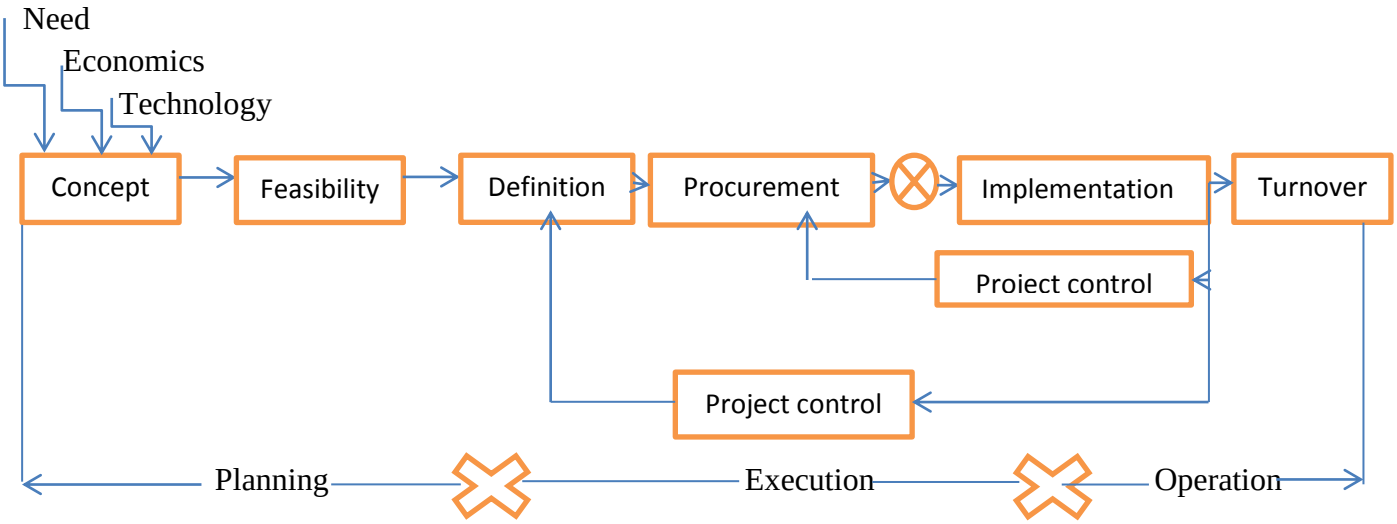

Figure 1.1 Project life cycles, A control oriented project life cycle model, Kelley, (1982).

Matt and Daniel (2011) confirmed that In order to oversee the effective completion of a construction project, it is essential to understand the project life cycle in its entirety. The four main stages of a typical construction project's life cycle are design, feasibility, construction and post-construction.

The British Airport Authority (BAA) established a protocol in 1995 to ensure consistency in their project processes and to control their construction projects in a manner that satisfies their standards. This was an attempt to achieve best practices across their business (Federation B P, 1995).The seven main steps of the protocol include every aspect of a building project. Inception, feasibility, coordinated design, production information, construction operation and maintenance are the seven main phases.

The close project phase marks the end of the project life cycle says (Kifle, 2023). Kifle also summarizes tasks in a project closeout agenda as such:

- Administrative Closure
- Post-Project Evaluation and Review
- Contractual Closure
- Recognition and Celebration of Outstanding Work Accomplished
- Verification and Acceptance of Project Deliverables
- Completion and Archiving of Project Final Records
- Post-Project Assessment
- Completion and Archiving Lessons Learned from the Project
- Transfer of Knowledge to Those Continuing or Maintaining Operation.

2.5 Project Management

Project management, according to PMBOK (2017), is the application of knowledge, skills, tools, and procedures to a variety of tasks in order to fulfill the demands of a particular project. However, according to ISO (2017), it is a special procedure that comprises a series of planned and regulated actions with beginning and ending dates, intended to accomplish objectives that satisfy particular specifications, such as time, money, and resource constraints. According to PMA as sited on (Rodolfo Siles, 2018), a project is an activity with financial and schedule restrictions that aims to produce a set of deliverables that satisfy quality standards and specifications.

The following is an explanation of the five fundamental functions of project management, per Turner, as cited in (Tilahun, 2020):

- The project requires effort, and the extent of that work needs to be controlled.
- The resources are put together into a temporary organization that needs to be run.
- The asset's quality or performance needs to be controlled. However, the project's work must also adhere to specific quality standards in order to produce a high-quality asset. Quality must be controlled.
- The project must be less expensive than the benefit in order for both parties to benefit from it. Cost must therefore be controlled. This entails controlling the use of not just financial resources but also human and material resources.
- There are various reasons why time management is necessary. To produce the item in a time frame that will yield the intended benefit, the work's schedule must be carefully controlled.

The overall planning of a project by assigning the right resources to complete it on schedule, within budget, and with the desired quality is known as construction management. The relationship between the three tradeoffs in a project cost, time, and quality is depicted by the "scope triangle." Combining the tasks and resources required completing the project's goals and deliverables within the allotted time frame and budget will result in successful project management Marwa (2013).

2.6 Project Performance

Project performance, according to Ali et al. (2018), is the degree to which project outputs and outcomes meet operational and technical requirements, budgetary goals, schedule goals, and ultimately the client's business needs. The traditional method of project performance involves assessing the project's scope, quality and cost. Indeed, project performance, which is seen as the efficacy and efficiency of action in the context of projects, is quantified as a result of the action measurement process (Głodziński, 2019).

According to reviews by Zheng et al. (2019) and Kabirifar & Mojtahedi (2019), Project performance is a trade-off between a number of metrics and dimensions, with a focus on what is accomplished, like scope and quality, in comparison to the resources, like time and money, needed to complete the project activities. The degree to which a project achieves its stated goal has been defined as project performance in the literature (Szatmari et al, 2021).

According to (ADRRI, 2014), project performance is frequently assessed using predetermined metrics that were empirically derived from earlier research. As a result, incorrect and frequently irrelevant criteria have been applied to project performance assessments. This has the effect of frequently not achieving the project's actual objectives. This is due to the fact that projects that are the result of their clients and other stakeholders serve as the perfect example of what makes the construction industry special. A project's uniqueness is determined by its various clients and stakeholders, the site's characteristics, and the outside environment. Because there are many project parties involved, including clients, consultants, contractors, stakeholders, shareholders, and regulators, the construction industry is inherently complex. The industry is subject to inadequate contract performance because of its complexity, fragmentation, and highly casual workforce employment.

2.7 Project Performance Evaluation

ILO (2021) Technical Cooperation Manual, defines project evaluation as a methodical, impartial appraisal of a project, whether it is ongoing or finished. Determining the project's relevance and degree of accomplishment, as well as its development effectiveness, efficiency, impact, and sustainability, is the goal. Lessons learnt from evaluations are also incorporated into the decision-making process of project stakeholders, such as national partners and donors. Additionally, according to the (ILO, 2021) project managers and other accountable officials should make sure that project evaluations are independent, trustworthy and support organizational learning while bolstering accountability and openness.

According to (Omid and Gustavo, 2018), Project evaluation is a complex process since projects differ in terms of their scale, the resources available to the industrial sector and their specific objectives. As a result, they must be tailored to the particulars of their context, particularly when changes occur over time.

Chen (2015) believes that there are numerous approaches to categorize program assessment and lists the following fundamental evaluation types: The first four basic types of assessments are (1) constructive process evaluation, (2) conclusive process evaluation, (3) constructive outcome evaluation, (4) conclusive outcome evaluation, and (5) hybrid evaluations. Constructive or formative methods offer insights for enhancing a program, whereas summative or conclusive methods assess the program's overall value or merit.

The results of a project assessment are influenced by the expectations and level of involvement of various stakeholders as well as the goals, worldviews and interests of the assessors. This indicates that the evaluation outcome is significantly impacted by the evaluation team's dynamics, context, social temporality and individual judgment (Haass, 2018).

2.7.1 Importance of Performance Measurement

According to the ILO (2021), evaluation is a crucial component of reporting and monitoring because it informs decisions and fosters organizational learning. A constant learning process is advantageous to the project team and its partners. A poor evaluation process is a missed chance for everyone to gain knowledge and apply it to their improvement. Additionally, the (ILO, 2021) states that evaluation is crucial in:

- Giving important stakeholders the data they require directing the project strategy toward accomplishing predetermined goals and objectives.
- Giving early notice of procedures and actions that require correction.
- Giving project partners the chance to critically evaluate the project's course and make decisions on enhancements in order to empower them.
- Increasing comprehension, drive and ability among project participants.
- Evaluating how benefits are distributed among various recipients.
- Constantly refining technical work and recommendations for new projects.

Because every respondent in their study agreed that performance measuring facilitates the process of designing and developing strategies for businesses, Ariyani et al. (2015) conclude that there is a direct association between strategy formulation and performance assessment. They all concluded that performance measurement has an impact on strategy creation throughout the entire process.

2.7.2 Project Performance Measurement Criteria

Project evaluation will take into account the following six evaluation criteria according to applying evaluation criteria thoughtfully (OECD, 2021).

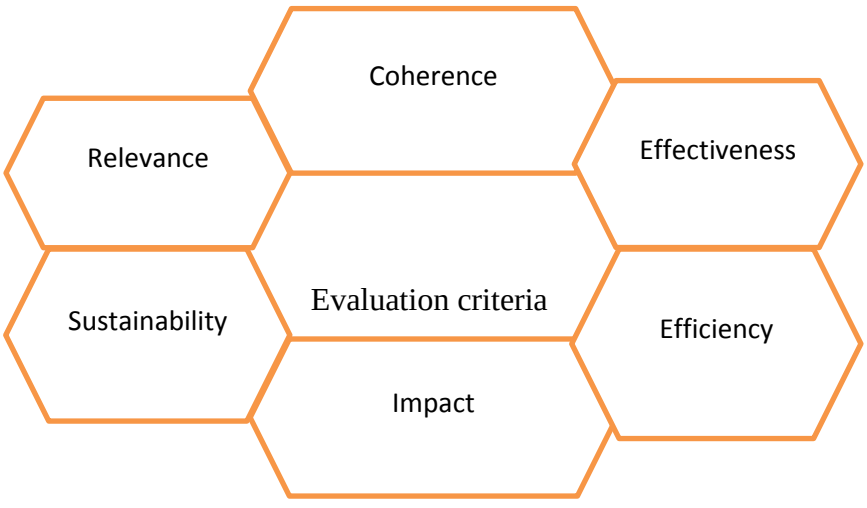

Figure 2.1 Project Evaluation Criteria (https://www.oecd-ilibrary.org)

Coherance is how well the intervention fit,effectivness is how well the intervention is achiving its objective,efficiency is how well the resources are being used, impact is about what difference the intervention make, sustanablity is about will the benfit last and finally relevance and that is if the intervantion is doing the right things.

Since events and circumstances are tangible, they may be analyzed and measured using logical methods such as benchmarks and indicators. Therefore, objective project evaluation criteria are appropriate for assessing projects with well-defined objectives, well-established procedures, and observable results that take place in stable contexts. Subjective opinions on the other hand adhere to interpretive presumptions that are ingrained in the notion that social interactions constantly create, alter, and recreate the social reality therefore Situations are unclear and susceptible to multiple interpretations Burrell and Morgan (2019).

According to Omid and Gustavo (2018), when evaluating a project's timing within its life cycle, they divide the evaluation criteria into three categories: ex ante, interim and post. An ex ante evaluation assesses a project before it is put into action. To make sure the project is viable and will yield returns on investment, it is carried either by project investors or on their behalf. Ex ante evaluation typically employs both subjective and objective standards.

According to Makarova and Sokolova (2014), the state and advancement of the project in relation to its plan are reflected in the interim project evaluation. At this point, actual facts and information on the performance of the project and its outcomes are gathered and examined while it is being implemented and Post evaluation mostly concentrates on the project's long-term results. The majority of post evaluation criteria are based on a social time perspective because it is a medium or long-term exercise; high degree of subjectivity is one of their main features Ngacho and Das (2014).

2.7.3 Project Performance Evaluation Tools/Models

Aryani et al. (2015) acknowledge that selecting the best model to measure performance is vital yet difficult. They also note that strategic planning is an essential component of performance measurement since it is critical to defining the business objectives.

Key Performance Indicators (KPIs) are the UK construction industry's answer to measuring project performances based on ten defined factors, according to John Egan (1998). These include three company performance indicators namely safety, profitability and productivity as well as seven project performance indicators: construction cost, construction time, cost predictability (design and construction), time predictability (design and construction), defects, and client satisfaction with the product and service.

Customer satisfaction surveys, social impact assessments and post implementation reviews (PIRs) are other categories of performance evaluation techniques. Customer satisfaction surveys gather input from project participants in order to gauge their degree of satisfaction. A project's social and environmental impact including its effects on ecosystems, communities and cultural assets is assessed through a social impact assessment. (PIR) evaluates a project's efficacy and success after it is finished.

It entails assessing whether the project met its goals, examining any problems or difficulties encountered during execution, and determining the lessons learned for subsequent initiatives.

Tools for comparative analysis and peer reviews are also employed as measurement tools. Peer reviews entail asking peers or subject matter experts who are not directly involved in the project for their opinions and advice. They offer an outside viewpoint and might assist in locating potential hazards or places in need of modification. The process of comparative analysis entails evaluating the project's performance against that of related projects or industry rivals. It offers standards for improvement and aids in determining areas of strength and weakness.

2.7.4 Challenges in Project Evaluation

There are many different approaches to project assessment since there are many different project scenarios and roles that project evaluation can play. This raises a number of questions about how projects are actually assessed. Regarding project evaluation, there is disagreement in the literature. The field of project evaluation according to Anzoise and Sardo (2016), is fragmented with multiple approaches that attempt to show different perspectives of the phenomenon to different audiences. The majority of project evaluation approaches only take into account time, cost, and quality known as the "golden triangle" in project management while ignoring "soft" criteria like long-term goals and the impact on society and the environment.

According to Adnan et al. (2014), overburdened projects and the requirement to finish the project before moving on to other projects without review are among the challenges in the post-evaluation phase. There is not enough time to evaluate the project after it is finished when too many projects are being carried out concurrently and other projects are waiting to begin. This is particularly true when there are not enough funds or resources available to hire outside experts to assess the construction projects. The second element is a lack of organizational knowledge regarding assessments; this is brought on by the organization's ignorance of the significance of post-evaluation and the shortage of specialized personnel in project evaluation. Additionally they also claim that elements like evaluator effectiveness, adequate funding for evaluation because evaluation systems need a lot of resources including time and money and the impartiality and neutrality of the evaluator are the elements that contributes to successful post evaluation systems.

2.7.5 Post-Project Evaluation (PPE)

Ex post evaluation, according to Ngacho and Das (2014), is an assessment technique that emphasizes the project's long-term results. The majority of ex post evaluation criteria are based on a social time perspective. They also admit that one of the main characteristics of these criteria is their degree of subjectivity, which means that there is no universally accepted definition of what these criteria are or a mathematical tool to quantify them.

According to Adnan et al. (2014), post-project evaluation aids in the creation of a knowledge base on potential hazards that will be utilized throughout the risk management procedure. The management of risk checklists and the creation of data for estimations and response plans may be aided by historical

databases. They added that safety measurements are mostly focused on the construction phase since the majority of incidents happen during this time.

According to Adnan (2014), several of these organizations require a qualified person to monitor the evaluation system. According to Adnan, the donor has a big influence on the review stage, and some organizations hire a third party consultant or utilize templates for the assessment. The majority of donors will have a template that contains the important factors that they are interested in such as time and money but it appears to overlook other important factors. Cost, time, and quality are the three most important factor groups for the post-evaluation system of building projects.

2.8 Project Success

The impact of project management or leadership on project success has been extensively studied. Achieving a steady stream of project goals on schedule, within budget, at the appropriate performance/technological level, while making effective and efficient use of the resources allotted and having the outcomes approved by the client and/or stakeholders, is then what is meant by successful project management. The activities included in the process groups may vary from project to project due to the inherent differences between each project and the potential for varying requirements from each customer (Kerzner, 2017).

Delivering successfully constructed projects is the cornerstone of the construction project management philosophy according to (Matt and Daniel, 2011) analysis. For a building project to succeed, several qualities are required. The success of a construction project is primarily determined by how well it is finished on time and within budget, they added. Other elements such as superior quality, few contract disputes, construction site safety and participant pride or pleasure can also have an impact on a project's success, Owners, users, contractors, subcontractors, designers, and others are all regarded as participants in the project. They also explain how, in recent years, sustainability has emerged as a crucial element of prosperous building projects.

2.9 Housing

2.9.1 Definition of Housing

Housing is defined as a tangible asset with potential return by Ricardo (1817) and as a fixed asset by Jevons (1871), regardless of whether it is owned or rented. Melnikas (1998) defines a house as a specific, generally small, physically and biologically close space where people or groups of people can pursue their biosocial lives by taking care of their dwellings, receiving services, and participating in other biosocial activities. In 1972, John F.C. Turner defined housing in terms of both the "process aspect" and the "product aspect”. Both components are related to the planner's and architect's work. One definition of housing as a "process" is "what it does to dwellers improve their quality of life. It focuses on the residents' physical and psychological requirements. When we speak to housing as a "commodity" or "product," we mean a constructed building with material and financial worth.

According to Henilane's (2015) analysis, the population's living level is indicated by the need for housing, which is also one of the fundamental human needs. The requirement that housing to be affordable, livable and relatively maintained in addition to being environmentally friendly and expressive architecturally is a hot topic these days.

2.9.2 History of Housing in Ethiopia

During the period of Emperor Haile Selassie: - In Ethiopia, land and house development were closely controlled and owned by a small number of persons and groups during the first half of the 20th century. According to Kebbede (1985), Renting was the only viable alternative available to low-income households, and they did it without following any official planning or control procedures. For instance, in 1962 just 1,768 people held 58% of the land in Addis Ababa, which translates to ownership of more than 10,000 m2 per person (Abate, 2001). This resulted in 55 per cent of housing units being rental housing (Kebbede and Jacob, 1985). MWUD (2007 E.C) states that there was no cogent strategy or action toward the provision of land and housing, the government showed no national commitment to the development of land and homes for the low-income sector.

In the period of the Derg regime (1974-1991):- the regime nationalized all urban land by declaring government ownership of urban lands and extra houses in July 1975 (Teshome, 2008). In the housing sector two new typologies were created Kebele Housing which is handled by Kebele Administration units, the smallest government administration unit that operates at the neighborhood level and government owned rental units, which are overseen by the Agency for the Administration of Rental Houses. At this time, rented housing made up about 60% of Addis Ababa's total housing stock (Mulugeta, 1995).

According to UN-Habitat, (2011) the nationalization had the effect of significantly lowering the rental price of affordable rental homes for tenants paying less than ETB 300 (USD 23). The centralized government managed the housing supply, but it was far from enough to satisfy the high demand. Though in practice the government ceded relatively little authority and retained its position as the primary driver of housing production, the "Derg" eased its control over the housing supply throughout the late 1980s by enabling private property owners and occupants of public premises to sell and trade their residences UN-Habitat, (2011).

In the period of EPRDF (1991- 2016):- The share of private developer contribution to the urban housing stock is small, but since 1991E.C, the private real estate market has expanded, catering mostly to affluent households in Addis Ababa and a few other smaller cities. The lack of widely available financing for cheap mortgages poses a challenge for private developers seeking to build affordable housing. After 1991, when lending rates sharply jumped from 4.5% for cooperatives and 7.5% for individuals to 16% for both, subsidized interest rates were also eliminated making it more difficult for low-income people to obtain a home loan (UN Habitat, 2011). The 1995 E.C constitution permits individuals, cooperative housing groups, and private entities to leasehold urban land-use rights (Zhang et al., 2019).

MUDHC (2014), states that when the now-defunct construction bank provided loans, the sum was not enough to meet the extraordinarily high demand. Local governments are the only ones able to supply land for housing development in metropolitan regions through auctions and direct allocation or allotments because the state still owns all of the property (MUDHC, 2014).The main national policy instrument in place for the successful construction of 383,000 affordable condominium units between 2006 and 2018 was the Integrated Housing Development Program (IHDP), according to Matsumoto and Crook (2021).

In the period of prosperity party (2019- Present):-Because of capacity and delivery concerns, as well as the program's heavily subsidized character, the IHDP is anticipated that it would soon be phased out (Selamawit, 2023). As one of the options the development of a 450 billion birr housing project by Ovid Group, the largest private housing investment in the city's history, has been approved by the Addis Ababa City Administration through its 70/30 public-private partnership program. The contractor will receive the land without having to pay a lease. In this strategy, the government provides 30% of the housing units for low-income citizens, while private developers finance and construct 70% of the housing units for sale. The new initiative seeks to satisfy local requests while addressing Addis Ababa's increasing housing scarcity. 60,000 of the 100,000 units that are planned to be built by Ovid Group on a 460 square meter land in Bole Bulbula. Ovid Group's partners, overseas loans, some local loans, institutional sales, and diaspora contributions are some of the funding sources for the complex. Additionally, Ovid intends to open a mortgage bank (Selamawit, 2023).

2.9.3 Rapid Urbanization

A concern for both established and emerging nations is finding inexpensive urban housing due to the growing urban population and migration from rural to urban areas. The percentage of people living in cities worldwide has risen from 30% in the 1950s to 54% in 2014 according to data from the UN DESA (2014). Kallergis et al. (2018) predicted that, by 2050 the 4 billion people living in urban areas will increase by 2.3 billion and in metropolitan environments, this leaves a large gap that must be supplied by the housing supply side. Ethiopia is the fifth least urbanized and second most populous nation in Africa.

According to the national definition, 23.5 million of Ethiopia's 112 million inhabitants live in urban areas as of right now (OECD, 2020); the report also adds Ethiopia's urban population is expected to grow significantly over the next few decades despite being significantly below the sub-Saharan average of 40.4%. The World Bank,(2015) projects that the urban population will grow at a higher rate of 5.4% per year, while the Central Statistical Agency of Ethiopia (CSA) projects that the urban population will increase to 42.3 million by 2037, growing at a rate of 3.8% per year. Given the level of poverty in the nation, it is certain that this rapid urban growth will result in a significant increase in the number of urban poor people and strain the government's already meager attempts to meet the demands of the growing urban populations.

2.9.4 Housing Stock

Shows in detail Ethiopian housing unit tenure in 2016, the general number of housing units with percentage of the total type of tenure in rural, urban and in Addis Ababa is expressed in Table 2.1.

Table 2.1 Ethiopian housing unit tenure in 2016, Source: - Matsumoto, T. and Crook, J, 2021.

Number of housing units (% of total), by type of tenure	Total	Rural	Urban	Addis Ababa
Owner-Occupied	15, 756, 705 (81.22%)	13, 940, 377 (94.59%)	1, 816 ,327 (38.96%)	247, 511 (29.80%)
Rented	2, 922 ,830 (15.07%)	416 ,019 (2.82%)	2, 506, 811 (53.77%)	507 ,265 (61.06%)
Free Or Subsidized	651, 112 (3.36%)	344 ,411 (2.34%)	306 ,701 (6.58%)	69 ,765 (8.40%)
Other	67 ,721 (0.35%)	36, 048 (0.24%)	31, 673 (0.68%)	6, 159 (0.74%)
Not Stated	793 (38.96%)	352 (-)	441 (0.01%)	(-)
Total	19 ,399, 161 (100%)	14, 737 ,207 (100%)	4, 661, 953 (100%)	830 ,700 (100%)

As per MUDHC (2005 E.C), the government still owns one-fourth of the whole housing stock in urban regions. Ninety three percent of all rented residences under government control were under Kebele administration (UNHABITAT, 2010). These Kebele homes are old, having been built decades ago, and have received little to no upkeep. Many of the homes do not adhere to basic hygienic requirements, and some are still without access to electricity or water. MUDHC (2005 E.C) claims that the government's lack of involvement in the upkeep of these homes and the lack of adjustments to rent prices are the main causes of the bad quality of the housing stock in Kebele. According to UNHABITAT (2010) just 30% of the stock of available housing is in fair shape, and 70% of it has to be completely replaced.

2.9.5 Key Players In The Housing Sector

Government, MUDHC (2005 E.C) states that presently the government plays a significant role in both the supply and development of housing. And according to UNHHBITAT (2010) the government is assisting and supporting private home builders, real estate developers, and cooperatives that build homes in order to fulfill the urban development goal by offering low cost and affordable housing to every member of society.

The government is the primary player in the development of condominiums, with the purpose of targeting the low and middle income segments of the population by building subsidized, reasonably priced homes through active participation in material manufacturing, importation, land supply and

housing finance notably for condominium residences. (Addis Ababa City Administration, Housing Registration Directive No. 2, 2005 E.C)

Real estate developers are the other participants. According to Kidst, (2014) Standard dwelling units, mostly for the medium and upper income groups, are being built by private real estate developers on a growing basis. Poschmann (2009) stated that Since 1992, there have been 1,667 registered real estate developers, with foreign and local developers having invested a total of Birr 11.9 billion and Birr 20.9 billion, respectively.

Housing cooperatives have offered a way to purchase a home since the late (1970's E.C). This delivery system was created in (1978 E.C) by CONCERN, an organization that has been active in promoting community involvement in infrastructure and sanitation upgrades. They mostly operate at the kebele and city levels. The government was offering low mortgage interest rates, generous land allocations, and substantial subsidies of up to 60% on building supplies. However, their contribution to housing building has decreased to a minimum mostly because of their own internal issues and the progressive withdrawal of government attention and subsidies (MUDHC, 2005 E.C).

According to UN Habitat (2010), a sizeable amount of the overall housing supply is made up of **informal, unplanned housing**. The fastest-growing supply method is informal housing, which is particularly common in Addis Ababa's city expansion regions. There are currently 60,000 informal settlers there and that figure is predicted to rise to 100,000 (MUDHC, 2005 E.C).

Formal (Individuals) according to UNHABITAT (2010) the majority of homes built by private individuals were paid for entirely out of pocket that is, without the need for mortgage loans and because of that their contribution to the housing crisis has been negligible. The report also adds up that the private construction sector is quite small and establishing, registering and operating a business takes a lot of effort and time. Since there is little incentive to build low income housing, those that do exist exclusively serve high-income populations.

2.9.6 Housing Needs

It is usually necessary to build one billion new homes by 2025 in order to address the housing crisis As a result, until the end of 2025, wealth of 650 billion dollars a year or up to 11 trillion dollars would be needed. Over 980 million urban residents do not have access to decent housing this effectively illustrates the evident housing scarcity that exists right now (UN-Habitat, 2016). Not only does the housing supply chain lack in numbers but obtaining decent housing that upholds social ideals and dignity is still a major issue everywhere in the world says Natnael and Imam (2022).

The demand and supply imbalance alone has a significant impact on Addis Ababa's housing affordability, according to CSA statistics from 1999, many researches also revealed that almost 80% of the 269,814 houses in Addis Ababa's inner region require total replacement because dilapidation (Azeb, 2011).

Given the level of poverty in the nation, it is certain that this rapid urban growth will result in a significant increase in the number of urban poor people and strain the government's already meager attempts to meet the demands of the growing urban populations. According to(kesto,2021) an estimated 1.2 million housing backlog exists only in capital city, Addis Ababa with a projected demand of 655,800 housing units during 2015-2025, far exceeding the estimated annual supply of housing of about 165,000 units nationwide. According to 2015 estimates, Ethiopia will have approximately 4 million new urban households by 2027 and 9.7 million by 2037. There will be a demand for 471 000 urban houses per year from 2015 to 2025 and for 486 000 houses per year from 2025 to 2035(Kihato and Gitu, 2021).

2.9.7 Housing Affordability

The insufficient supply of fairly priced housing that meets demand is one of the primary causes of the shortage of affordable housing (Kallergis et al., 2018). In contrast to developed nations, the problem of a shortage of affordable housing is particularly apparent in less developed nations, Less developed nations are 28% less inexpensive when measured by the median affordability metric (Judge & Tomlinson,2018). In 2016, a UN-Habitat research stated that just 13% of cities worldwide offer affordable housing (UN HABITAT, 2016).

According to FDRE CSA (2017) and OECD (2021), the average Ethiopian urban household spends 65% of its annual income on housing and food alone. For urban households in the first consumption quintile, this number increases to 80%, while for those in the fifth quintile; it only decreases to 60%.

According to C-GIDD (2020), even with housing finance just 3.5% of urban households are expected to be able to buy the most reasonably priced 20m2 new dwelling unit (US$55,871) built by a professional developer or contractor. According to estimates, the median rent shares of households in Addis Ababa's informal housing are far lower (14.8%) than those in legal housing (45%), IHDP (52%) or cooperatives (56%).According to the Zhang et al. (2019), low-income households in Addis Ababa (such as those in quintiles one and two) can virtually only afford kebele or informal housing, which highlights Ethiopia's significant issue in defining and providing affordable housing for everyone.

According to Elias, (2008) 92% of Addis Ababa's population made less than $167 per month (3,340 Eth birr), whereas the cheapest private real estate homes for tiny residential households were between one and three million birr. Consequently, the majority of Addis Ababa inhabitants were unable to buy it when the lowest price dropped to between three and six million birr in 2016. Elias adds it is known from past experiences that housing costs rise in direct proportion to increases in housing demand however adequate attention needs to be paid to housing affordability that is suitable with the varying income levels of city inhabitants.

According to (UN-HABITAT, 2010) There is a huge market for economical, hygienic and serviced housing; this demand is a result of the kebele housing stock’s low states on the other hand, effective demand is relatively small. Effective demand is determined by a household's willingness and ability to pay for housing, which is influenced by their income and level of preparedness. Thus, the most pressing demand is for reasonably priced housing, The report also adds the majority of Ethiopians cannot afford the formal housing provided by the private market, despite effective demand being hard

to measure due to the need for accurate data on income levels and spending patterns of households, as well as their ability to save and prioritize housing over other forms of investment.

2.9.8 Integrated Housing Development Project

2.9.8.1 Integrated Housing Development Project History

In Ethiopia the concept of Condominium housing as a separate form of ownership was not familiar until 2003 (MUDHC, 2005 E.C). In 2005, the government of Ethiopia considering Provision of houses as one of the major developmental tasks to reducing poverty and improving The livelihoods of slum dwellers; and thereby bringing sustainable socio-economic development, established a National Integrated Housing Development Program under the then Ministry of Works and Urban Development (MWUD) later renamed as the Ministry of Urban Development and Construction (UNHABITAT, 2010).

State Minister Arkebe Equbay was the driving force behind the program during his time as Mayor of Addis Ababa between 2003 and 2005. His main goal was to build low cost housing in Addis Ababa. He made a proposal to the German Technical Corporation (GTZ) office to which they responded by setting up an office in Addis Ababa (UNHABITAT, 2010) and the city administration has undertaken a pilot project, which constitute the construction of 700 housing units to test the effectiveness of the program. After the successful completion of the pilot project, the program has been scaled-up to its full scale and become one of the major tasks of the city administration in each fiscal year (Solomon, 2014).

2.9.8.2 Integrated Housing Development project objectives

(UNHABITAT, 2010) summarizes the objectives of the IHDP program as being in line with the MDGs (millennial development goals), which seek to improve the lives of at least 100 million slum dwellers by 2020 and to cut in half the number of people without access to clean water and sanitation by 2015. The report also adds In addition to achieving high density growth and better urban circumstances, it also seeks to cut infrastructure costs, lower the rate of urban sprawl, and get rid of slums in Ethiopia by around half.

According to S. Delz, (2016) the IHDP was also created as part of the nation's economic development strategy, With this program, the government hopes to finance and construct much-needed homes, prioritizing middle-class and particularly low-income residents. In order to boost local companies, encourage the use of locally produced building materials, and provide job opportunities,

According to UN-HABITAT (2010), the government's original goal for the IHDP for 2006–2010 was to:

a) Build 400,000 housing units.
b) To generate 200,000 jobs in order to make a substantial contribution to the national goal of halving urban unemployment.
c) To encourage the sustainable growth of 10,000 small businesses in the construction sector.
d) To provide 6,000 hectares of serviced land annually for investments and homes.
e) To improve and expand the capabilities of building material suppliers, engineers, consultants, contractors, and foremen.
f) To assist the private sector in producing 125,000 housing units annually by providing infrastructure, land, a supportive legislative and policy environment.

2.9.8.3 Integrated Housing Development project Performance

In the first four years of the IHDP, from 2006 to 2010, the government planned to build 360,000 condominium apartments, of which 175,000 (48.6%) were to be built in Addis Ababa, the nation's most populous metropolis and the remaining 185,000 (51.4%) in a few chosen regional cities (MUDHC, 2014). MUDHC, (2014) report also states that IHDP ended operations in all regions but Addis Ababa in the middle of 2010 and The suspension was brought on by low effective demand, partly because of locals' opposition to high-rise condominiums on sociocultural and aesthetic grounds, as well as slow uptake and high costs, specifically the limited ability of households to pay the down payment and monthly mortgage and of regional states to repay construction loans.

According to UN-Habitat, (2011) 69,921 units in total were built by IHDP in the regional cities except from Addis Ababa prior to the suspension. In addition to involving almost 2,000 contractors and 12,000 SMEs in housing development projects, the IHDP has resulted in the construction of 383,000 housing units overall between 2006 and 2018 (of which 314,000 are in Addis Ababa) and the transfer of an estimated 245,000 units of which 182,000 in Addis Ababa and 62,300 in secondary cities (KDI, 2018). KDI explains as a result, IHDP has quickly added significantly to the stock of urban housing while also generating employment possibilities in the community, The initiative also has strengthened the domestic construction sector which lacked relative capacity and knowledge prior to IHDP. A shortage of between 1.2 million and 1.5 million housing units is estimated, and factors like high subsidies, limited government capacity, labor and material costs, and rapid population growth have made it difficult for IHDP to meet the growing demand for housing (Keller and Mukudi, 2017).

The unintended gap in the allocation of IHDP units prompts inquiries regarding the effective utilization of public funds. The percentage of households currently residing in IHDP units suggests that an estimated US$2–3 billion may have been inadvertently misallocated to urban households in the top two consumption quintiles (Zhang et al., 2019). According to The World Bank, (2015) given the highly subsidized nature of the program (US$9 billion), it is obviously not an ideal conclusion that many low-income households are priced out of even the most modest condominiums featured in the IHDP program, or must resort to leasing them out to earn money. Additionally, the "40/60" program, which

was limited to Addis Ababa and catered only to middle-class households, was only affordable for households in the highest consumption quintile (based on a 30% monthly savings-income ratio), As a result, wealthy Ethiopians living in secondary cities or even overseas applied for the program, significantly increasing demand from groups that exceeded the program's target base and placing a strain on Addis Ababa city administration's capacity (KDI, 2018).

According to an analysis by Zhang et al. (2019), the government paid an average of 647,007 ETB (US$23,292) for the delivery of one IHDP unit; this translates to about 12,094 ETB (US$431) per m2. Based on this information, the government estimated that the total cost of building all IHDP units exceeded 247 billion ETB (roughly US$9 billion). It was projected that the 383,000 IHDP units built between 2006 and 2018 suffered government subsidies of about 150 billion ETB (US$5.3 billion), assuming that the government collected the entire average transfer price upon the sale of all produced units, this would imply that the government only recoups 35% of the building costs of an IHDP unit.

Within eight years of the program, prices for every type of property had risen, according to the World Bank (2015). According to the study's findings, the average price rise or increase over a seven-year period for studio units was 181%, one-bedroom units were 275%, two-bedroom units were 260%, and three-bedroom units were 222% over their 2004 initial levels. Sadly, family earnings did not increase at the same rate as home prices throughout that time, and it is obvious that affordability has been put to the test severely (Adem Bori et al., 2015).IHDP has unintentionally encouraged recipients to lease their apartments, which has led to a partial increase in the supply of urban rental housing even though the program is intended to promote homeownership. Up to 70% of IHDP households are expected to lease their condominiums, frequently informally, in order to supplement their income (World Bank, 2015). For many households, this is a necessary step in order to pay their mortgages.

IHDP's goal of improving housing quality for low-income households is at odds with the fact that, despite the fact that some low-income households have benefited from the additional and sometimes substantial sources of income that come with leasing their condominium units, these households are often forced to return to informal housing with subpar living conditions during the leasing process (Matsumoto, T. and Crook, J., 2021). Stark and Yitbarek (2018) summarize the majority of IHDP condominiums in Addis Abeba have been erected at the urban periphery, which contributes to urban sprawl. Some early condominium buildings and specific redevelopment projects have been completed in some inner city regions. In actuality, almost every IHDP construction constructed between 2013 and 2018 was situated more than 15 kilometers outside of Addis Ababa’s city center, according to Franklin (2019). While meeting demand has been a primary focus, this provision oriented strategy runs the danger of preventing cross sectorial integration between housing, transportation, and spatial planning policies.(Rode,P et al., 2017).

According to Matsumoto and Crook, (2021) due to the multiple issues that have been detected, capacity constraints and delayed household dwelling unit distribution it is anticipated that the IHDP will soon be phased out in its current configuration. Since 2013, the IHDP lottery registration system has been inaccessible to new applicants, as there is a waiting list that currently stands at 800,000. Additionally, previously scheduled IHDP construction developments have been postponed. In this regard, in order to provide affordable housing units to a market with a high level of unmet demand, the government is actively looking for new and alternative housing policy tools to replace IHDP.

However, to date, these alternative instruments have not yet been made public, aside from an announcement to boost the role of the private sector (foreign and domestic).

2.9.8.4 IHDP unit allocation and loan programs

According to MUDHC, (2014) IHDP units are funded by discounted mortgage loans (a kind of mortgage interest deduction) from the Commercial Bank of Ethiopia, which are distributed through a lottery system and IHDP loan program criteria or requirements are stated as such, an applicant had to be at least eighteen years old, have lived in the city where they were asking for a unit for at least six months, and not already own a home (or one owned by their spouse). Special provisions were inserted in the lottery system, such as requiring women to occupy 30% of the IHDP units and giving priority to elderly or disabled people for ground floor housing units. Before being eligible for the lottery draw, applicants had to have saved a minimum amount in the Commercial Bank of Ethiopia, equivalent to the cost of the apartment they intended to purchase as a down payment. The report also adds these deposits were used to finance development and they took up a large amount of household savings over an extended period of time. The housing loan programs offered by IHDP were separated into three groups as represented in the Table 2.2, each of which represented a distinct target market and set of financial requirements (MUDHC, 2014).

Table 2.2 IHDP loan program financial requirements. Source: MUDHC, 2014.National Report on Housing & Sustainable Urban Development.

IHDP Loan Program	Down Payment	Loan Term	Loan Rate
10/90	10%	25 years	9.5%
20/80	20%	20 years	9.5%
40/60	40%/100%	17 years	7.5%

2.9.8.4.1 40/60 housing loan program

The 40/60 program was designed for middle-income households. Ethiopians living abroad were welcome to participate in the 40/60 program; it also encourages individuals who are able to deposit to pay in advance. In recognition that the IHDP's subsidies were not financially feasible, the 40/60 program was established as a direct modification to the program. Only available in Addis Ababa in 2014, it was the last of the three lending programs to be created. As a result, because the units are distributed at a price that is more in line with the market, the 40/60 program's required 40% down payment has somewhat reduced the government's financial burden (UN-Habitat, 2011 and MUDHC, 2014). The 40/60 group savings will accrue 5.5% interest over the course of five years, and the loans, which are due in seventeen years, will have 7.5% interest rather than the market rate of 9.5%.

2.10 Other Countries Experience

USA According to expert assessments of the current state of housing policy in the United States by Olsen (2003) and Green and Malpezzi (2003), local governments have been playing a larger role in recent years, but the federal government still bears the primary responsibility for low-income housing policy. Due to a steady transition over the past 40 years away from public housing and toward housing allowances based on renter household income, only about 30% of federally subsidized housing units are currently in public housing. The current majority opinion maintains that demand-side; income-related rental assistance policies are more effective than supply-side rental assistance policies based on a variety of parameters. Numerous empirical studies support this viewpoint, many of which are compiled in Olsen (2003). Furthermore, policymakers now support "DE concentration of poverty populations" and more housing options for rent-assisted residents because to the negative experience with public housing.

Samson, 2020 the government has been dealing with the negative social and economic effects of public programs since the 1960s and 1970s, citing the United States of America as an example. Inadequate upkeep, insufficient social facilities, and a dearth of employment prospects effectively trapped the impoverished in a circle of poverty, transforming multi-story affordable public housing into hotspots for poverty and a haven for abuse and crime.

The European experience according to Wubalem, (2018) the experiences that are being applied in the United States and those in Europe are somewhat comparable, Although there are a variety of interventions in place in most European nations, three main pillars of housing policy may be identified: (i) encouraging home ownership (ii) building public housing; and (iii) providing direct rental subsidies to households, particularly those with low incomes. In the United Kingdom Since April 2013, new property buyers in the UK have had access to equity loans of up to 300,000 pounds. The equity loan can be repaid over a 25-year mortgage term, with no fees for the first five years. Consequently, a comparison of the average monthly salary with the monthly mortgage payment for a home reveals that it is reasonably affordable by many citizens (National Statistics, 2018).

China Wubalem (2018) explains that the majority of urban housing was rented privately from landlords before to 1949. In the 1950s, there was a socialist revolution that resulted in the nationalization of most large landlords' properties. As part of a comprehensive welfare provision system, public housing was constructed by government owned businesses and organizations (work units) and given directly to their employees. Economic and comfortable housing (ECH) and affordable rental housing (CRH) are the two main types of low-income housing found in Chinese cities. Rent reduction, rent subsidies, and housing providing at controlled rates are some of the several ways that CRH subsidies can be provided. ECH stands for ownership-oriented housing, which developers build on free land given by local governments and make available to qualified households at government-set prices. Homeowners are unable to sell their properties on the open market for a profit due to the restricted property rights granted by ECH.

Singapore One of the best housing initiatives in Singapore in terms of design, funding, building, and management is the public housing estate. Because of this, the development encompasses large regions, and the buildings house more than 60% of the city's inhabitants. The housing development is substantially financed by governmental financing, according to Wubalem (2018). The Central Provident Fund (CPF), a social security program, is used to pay back the debts. The fund, which originated from pension schemes, is a mandated savings vehicle. However, people must continue working in order to obtain ownership following consistent loan payments. Because it promotes ongoing employment, CPF ends up being essential for the national economy by ensuring a consistent supply of labor. Housing is assisted from employers and provident funds. The neighborhood is laid out with a grid of streets creating large green blocks that resemble parks, and the buildings there are all identical high-rise apartments. To ensure that most of the population was satisfied, extensive planning and building were required. There are central transportation terminals and public transit networks that service the blocks directly. The government oversees the construction and management of the buildings (Wubalem, 2018).

2.11 Summary of Literatures

Project performance, according to various literatures, is the degree to which project outputs and outcomes meet operational and technical requirements, budgetary goals, schedule goals, and, ultimately, the client's business needs. Performance assessment and strategy formulation are directly correlated, as evidenced by the fact that evaluation is a crucial component of the monitoring and reporting that informs decision-making and fosters organizational learning.

The literature analysis states that selecting the best model to measure performance is important yet difficult. They also note that strategic planning is an essential component of performance assessment. The success of a construction project is mostly determined by how successfully it is finished on time and within budget. Other elements, such superior quality, few contract disputes, construction site safety, and participant pride or pleasure, can also have an impact on a project's success. Building a knowledge base on potential hazards is facilitated by post-project review and will be utilized in the risk management procedure. Additionally, the study adds the management of risk checklists and the creation of data for estimations and response plans may be aided by historical databases.

It has been emphasized that the desire for housing is not only a fundamental human necessity but also a measure of the population's standard of living. In Addis Ababa, rental housing made about 60% of all housing stock by the mid-1980s. The share of private developers' contributions to the urban housing stock is small, but since 1991, the private real estate market has expanded, catering mostly to affluent households in Addis Ababa and a few other smaller cities. The literature also demonstrates that obtaining decent housing that upholds societal values and dignity is still a major issue worldwide, and that the housing supply chain is not only quantitatively deficient. There is a huge market for economical, hygienic, and serviced housing. The current housing shortage and the subpar, irreparable state of the current housing stock are the causes of this demand.

From the reviewed literature, for low- and middle-income urban households in Ethiopia, the government led Integrated Home Development Initiative (IHDP) provides housing. In addition to achieving high density growth and better urban circumstances, it also seeks to cut infrastructure costs, lower the rate of urban sprawl, and get rid of slums in Ethiopia by around half. Thus, in a short amount of time, IHDP has significantly increased the supply of urban housing while also creating local economic prospects. However, the mismatch in the allocation of IHDP units raises concerns about the effectiveness of employing public resources. It has been stated that due to the many issues that have been uncovered, in addition to capacity issues and delayed home distribution to homes, it is anticipated that IHDP would soon be phased out in its current form.

2.12 Research Gap

Inefficiencies regarding time and quality are the common issues raised in the integrated housing building sector, the fact that no one is gathering experience, researching each project, digesting it and making it easily accessible to planners and architects is one of the reasons so many costly errors are repeatedly committed. But the performance of the integrated housing building sector must be continuously improved by clearly identifying its issues in project bases so that contextually appropriate integrated solutions can be offered.

With this in mind this research question the overall objective of the housing project, understand the root causes for the problems and explore strategies to enhance productivity and efficiency in future endeavors. Since housing projects are still being implemented the post project assessment or evaluation of done projects will help the new ones for not repeating mistakes again.in Table 2.3 shows some of the gaps identified in recent research works.

Table 2.3 Summary of gap identification

No.	Source	Gap
1	Mahlet Abebe, 2023	Effectiveness material management practices and impacts of materials management on construction project performance Was discussed in this research, The study did not examine effectiveness of material utilization (consumed versus what was intended or given) it focused mainly on the practices.
2	Kidst Merkebu , 2014	The research focused on the effectiveness of the entire housing project finance utilization not being specific of a particular housing scheme or site.
3	Melen Kassu, 2023	This research identifies the factors that affect the timely performance of Addis Ababa's 40/60 housing construction projects. This study focuses on delay excluding other factors.

The intention of this study was to fill the literature and practical gap on the effectiveness of the housing project objectives or policy. This research shows how well the project performed in accordance with the overall policy objectives and also in identifying areas where projects may be falling short or excelling in project basis. The importance of studying this topic is to highlight the inefficiencies and challenges that exist within, a desire to understand the underlying causes and potential solutions in project basis in order to drive meaningful improvements and optimize project outcomes in the overall housing project policy.

CHAPTER 3
RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

An overview of the study methodology and the sort of research methods used to collect data are given in this chapter. This covers the research strategy which is data source, collection technique and data analysis technique.

3.2 Research Design

The process of gathering, evaluating and interpreting data in order to provide an answer to a query or issue is known as research. In light of this, research design and methodology serve as a tool that unifies all research procedures and directs the investigator toward the study's goals and objectives. As a result, a research design is the collection of techniques and steps used to gather and examine measurements of the variables mentioned in the study. According to Creswell (2014), a study's design establishes its nature, data gathering techniques and strategy for statistical analysis. The performance of housing projects: A Post Project Evaluation of branch two 40/60 Housing Project in, Ethiopia is investigated in this study employing a descriptive research design to highlight the inefficiencies and challenges that exist within, to understand the underlying causes and potential solutions in project basis in order to drive meaningful improvements in the housing sector.

The study started by problem identification from observation and from that research objective was driven with target population identification and cultivating research questions. After that, a thorough literature study was conducted using a variety of sources including reference books, journals and websites. This was followed by a primary step of data collecting using project documents and reports and a second stage of data collection using interviews and questioners. Interviews are employed because a researcher wants to provide evidence for the claims by thoroughly examining an individual, a group of individuals, an organization or a specific project (Naoum, 2007). In order to learn more about the specifics of the advantages realized, the challenges faced and the methods employed to overcome the implementation issues interviews and questioners were conducted for this study.

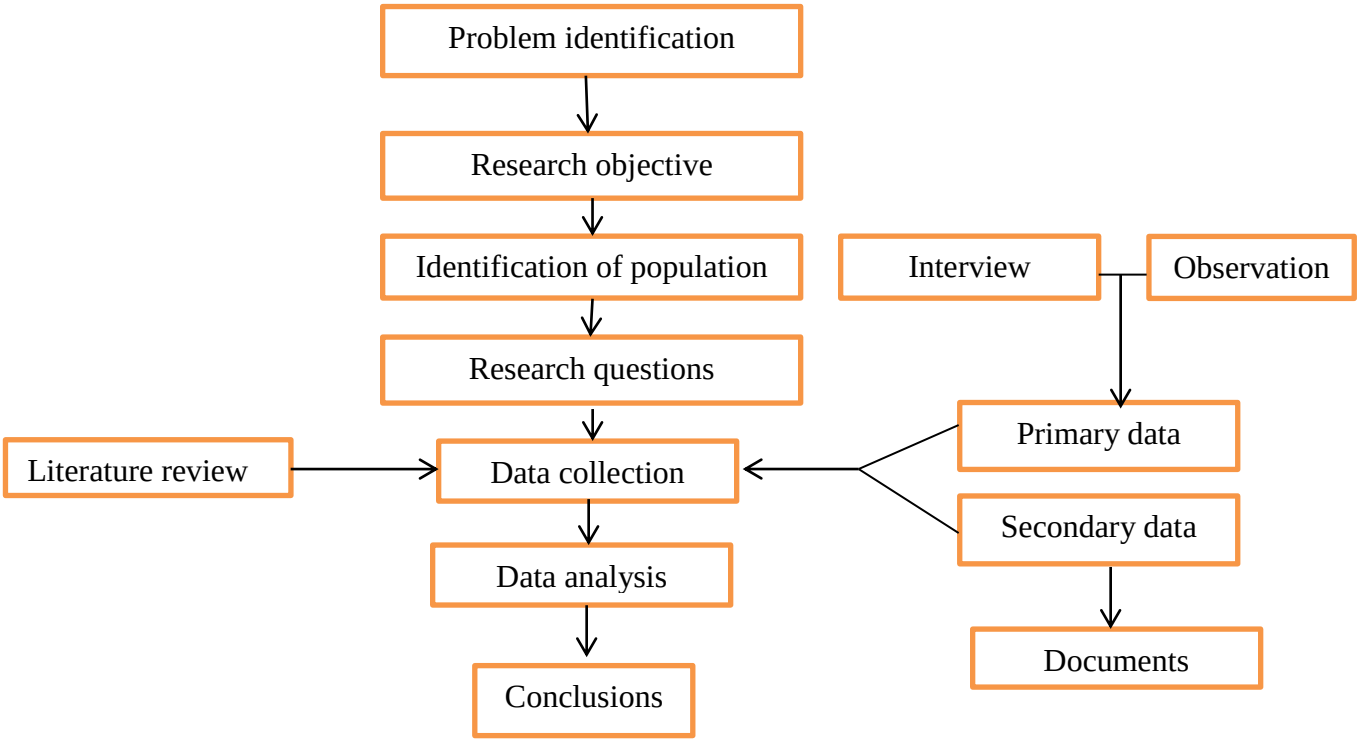

Figure 3.1 Steps of research design

3.3 Research Approach

The research started with problem identification, which has been done through literature review and observation. As an output of this steps "A Study on the performance of Housing Projects: A Post Project Evaluation of branch two 40/60 Housing Project in Ethiopia" were identified as a proposed problem to be studied. The study is conducted in project two 40/60 housing projects in Ethiopia. It focused on 40/60 housing building projects, which have reached provisional stage between the years 2014-2016 E.C.

The study gathered information from documented files and reports, customers, clients and brokers who have firsthand experience or information regarding the different aspects of the performance of Housing Projects. In this research quantitative and qualitative research methods was employed. The data findings from project questionnaires, actual documents and reports is developed for quantitative data, and through interviews, observation and actual documented data qualitative data is obtained, the data collected through these methods is analyzed and presented in chapter four.

3.4 Population and Sampling Technique

3.4.1 Study Population

For this study the target populations were condominium houses constructed by AAHDC and distributed to People through lottery system. The target population of this research for the collection of the documented data and reports is branch two 40/60 housing projects. Because of the repetitive issue rose to deliver these homes for home owners Addis Ababa City Administration Housing Development Corporation (AAHDC) has formed independent office (branch two) which was responsible for 7 sites under it. Since this branch office contains seven sites under it, it means it is good representative of the entire current housing projects in Ethiopia specifically projects under provisional stage.

The populations of the study for the interviews included stakeholders who are engaged in the building construction projects from the client side such as process leaders, office engineers, construction supervisors, customers who are owners and who are on waiting for the lottery system and brokers etc. Professionals included in this study were those that have direct involvement in the construction process of the project.

3.4.2 Sampling Method

Both probability and non-probability data sampling techniques can be used in data analytics, according to Biscobing and Blasnik (2018). To make sure there is no correlation between the points selected for the sample, probability methods employ random numbers that correspond to points in the data set. Convenience sampling, sequential sampling, purposive (judgmental) sampling, and quota sampling are examples of non-probability data sampling techniques.

Purposive sampling was used for this research, Projects that are on closeout stage (final and provisional acceptance) in the past 2 years were chosen. Purposive and judgmental sampling techniques were employed for the interview in order to get precise information regarding the particular goals of the study. The number of year's individuals spent working on these initiatives in a certain role served as the criterion for this. Additionally, brokers who operate in or have understanding of these sectors were selected to answer the questions set for the brokers. However the research contains limited sample size so it is important in further research a larger dataset is necessary to draw more definitive conclusion. Therefor for future studies it is essential to expand the sample size significantly to include a broader demographic of customers and stakeholders.

3.5 Data Collection

In this study, both primary and secondary data were collected to generate relevant information to the objective of the study. Primary data is collected through a questionnaire, an interview and an observation. And the secondary data sources include actual project documents and reports, books and journals in construction project management, project performance evaluation, integrated housing development projects as well as related archival documents on post project evaluation about projects and construction works. Most of the data in the study were obtained from actual documents, project progress reports, completion reports and also standard, consumed and delivered material reports. Data in the study were also obtained from primary sources through the application of primary data collection instrument (observation, questionnaire and interview).Data is collected in this method so that to have contextual bases on the underperformance problem of the projects if there is any and their effect on the overall performance of the housing projects. The Data was collected using these methods from a limited sample size due to concerns that gathering information from a larger group could introduce biases, potentially compromising the accuracy and reliability of the findings.

3.5.1 Questionnaire

One kind of survey is a questionnaire, in which participants fill out a form with the researcher's questions. The study objectives and theoretical directions acquired from the literature review served as the foundation for the questionnaire's design. The questionnaires were distributed to respondents of brokers that work on buying, selling condominium housing and also real states projects; this is used to gather data for one of the objectives in this study.

3.5.2 Interview

The interview is a versatile, adaptable, and practical method of gathering information that is most likely unavailable through methods like observations and recorded data. By enabling each and every interviewee discusses his/her experience on the topic objectives the researcher generated data. The Interview is conducted with customers who are already an owner, customers on waiting list and selected client side employees with years of experiences on these specific projects to gather information on the performance of housing projects. The interviews are done over the phone and in person. The researcher first determines whether participation is voluntary. The time and day of the interview are chosen with the convenience of the interviewees in mind. Ten to twenty minutes were allotted for the interviews.

3.5.3 Observation

Observations were conducted to supplement data obtained from secondary data sources. Direct observation where the observer observes rather than participates in the activities was employed in this study. The researcher observed the performance under this project in respect to its initial objectives.

3.5.4 Secondary Data Sources

By offering a broad range of perspectives on the topic, secondary data sources like Books, journals, thesis and other materials. This data are also used as a source for other primary data sources by offering a general overview of the target area.

3.6 Method of Analysis

Data analysis is the kind of analysis where we apply logic to comprehend the collected data. Accordingly, identifying recurring patterns and summarizing the pertinent information gleaned from the study are the primary tasks of data analysis. Descriptive statistical techniques are applied in this study. The study mostly employed qualitative data analysis methods. In particular, the outcomes of the observations, interviews and studied documents were analyzed and explained using the descriptive approach. Additionally, the real data or reports and the data gathered through questionnaires were analyzed using quantitative descriptive statistics, a statistical approach of data analysis.

3.7 Ethical Considerations

Research ethics, according to (Editage, 2019), are moral guidelines that direct researchers to carry out and disclose research without deceit or the purpose, whether conscious or unconscious, to damage study participants or members of society at large. This study takes into account the ethical considerations that are crucial for scientific research. The data supplied by the participants and the qualitative data collected will determine the study's outcomes, and the procedure will be impartial and realistic. The respondents will be asked for their consent, and the researcher will promise to keep the information collected for this study private.

CHAPTER 4
DATA ANALYSIS

4.1 Introduction

4.1.1 Background of the Project

As stated by Addis Ababa homes development Corporation Branch 2 Office in 2013 Fiscal Year, implementing the structural reforms of the housing construction, supply and Governance is one of the key economic and social issues visible in the wide housing demand and supply gap in our city. To overcome this, according to the implementation of change and reform that is being done by the corporation Pervious Branch 04 and 02 are merged with the sites under them which are Meri loke site, Bole ayat one site one, Bole ayat one site two, Bole ayat one Site Three, Bole one Ayat Site Four, Bole Ayat Site Two and Summit the corporation with total number of 207 buildings and 19,656 residential and commercial houses under it.

4.1.2 Location of the Projects

Addis Ababa's northeastern region is home to the chosen case study within the recently created Lemi Kura sub-city. The location is inside Addis Ababa, close to the town of Legetafo, which is thought to be a neighbor of the regional state of Oromia. The exact location of the sites is stated on the Table 4.1.

Table 4.1 location of the sites under project two

No	Site Name	(Northing)	(Easting)
1	Bole Ayat One Site Four	8.996105	38.889414
2	Bole Ayat One Site Three	9.008336	38.897674
3	Bole Ayat One Site Two	9.012018	38.892571
4	Bole Ayat One Site One	9.015194	38.895414
5	Meri Loke	9.019465	38.868209
6	Summit	9.000698	38.850270
7	Bole Ayat Two	9.006762	38.895203

4.1.3 Number of Sites, Topology and Number of Blocks

The 40/60 condominiums under project 02 branch begun in 2007 and 2008 E.C and transferred in 2013 and 2015 E.C which make it one of the late project sites in the IHDP program. This condominium houses are built for 19,656 households. The project consists of several typologies. Some of those typologies include B+G+8, B+G+10, 2B+G+13 and 2B+G+15 both pure and mixed residential typologies, where ground and first floor are for commercial works .The blocks are built dispersedly and intend to provide enclosed internal green areas, parking lots, and playgrounds. The sites with the Type of typologies and the number of blocks with total number of shops and residential houses are presented in Table 4.2 below.

Table 4.2 Number of sites, Topologies and number of blocks under project two.

SN	Site Name	Typology	No of Block	House in No			
				Shop	One bed room	Two bed room	Three bed room
1	Site-1	B+G+8	14	174		98	294
2	Site-2	B+G+8	20	257		140	420
		B+G+10	18	594	288	864	288
3	Site-3	B+G+8	32	380		224	672
		B+G+10	9	279	144	432	144
4	Meri Loke	2B+G+13	14	392	308	940	356
5	Site-4	B+G+8	14	190		98	294
		B+G+10	8	296	128	256	256
		2B+G+13	18	666	396	1188	396
6	Ayat-2	2B+G+15	16	1088	748	2244	748
		2B+G+13	34	496	416	1248	416
7	Summit	B+G+8	10	120		70	210
Total / Average			**207**	**4932**	**2,428**	**7,802**	**4,494**

4.1.4 Progress of the Housings

The built houses are transferred to the home owners however the projects are under provisional acceptance stage and the physical cumulative progress status in 2016 E.C of each sites are stated under the Table 4.3.

Table 4.3 the physical progress of the sites under project two.

SN	Site Name	/Typology/	No of Block	Physical progress (%)
1	**Site-1**	B+G+8	14	98.32
2	**Site-2**	B+G+8	20	99.06
		B+G+10	18	98.81
3	**Site-3**	B+G+8	32	98.68
		B+G+10	9	98.8
4	**Meri Loke**	2B+G+13	14	99.35
5	**Site-4**	B+G+8	14	97.73
		B+G+10	8	97.63
		2B+G+13	18	96.98
6	**Ayat-2**	2B+G+15	16	80.55
		2B+G+13	34	79.79
7	**Summit**	B+G+8	10	98.17
Total / Average			**207**	**97.88**

4.2 The performance of the Housing Projects

Under this topic the general anticipated objectives of housing projects are compared with the achievements of housing projects in particular in project two.

4.2.1 Number of Houses Built and Transferred

As stated above on table 4.2 under project 02 there are seven sites and within this sites 207 buildings are available. In total of 14,724 houses and 4932 shops are constructed and among these buildings 158 of them are delivered and 7,963 numbers of keys are transferred to the owners. Among the houses 1,693 of them are being renovated by the owners while 3,445 are where living has started. Under the Table 4.4 comparisons of number of blocks constructed and number of blocks transferred/delivered is described where the numbers show some difference.

Table 4.4 the number of houses constructed versus transferred of the sites under project two.

No	site name	Number of blocks constructed	Number of blocks transferred
1	**Bole Ayat One Site Four**	40	34
2	**Bole Ayat One Site Three**	41	39
3	**Bole Ayat One Site Two**	38	34
4	**Bole Ayat One Site One**	14	14
5	**Meri Loke**	14	14
6	**Summit**	10	10
7	**Bole Ayat Two**	50	13

4.2.2 Employment opportunities

To create jobs so that to contribute significantly to the national target of reducing urban unemployment, to promote the development of small enterprises and to enhance and build the capacity of contractors were some among the many objectives of integrated housing development projects. In this regard in all seven sites 100 contractors and 99 metal work,58 sanitary work ,97electrical work and 16 site work enterprises took part in implementing projects under branch two. In total 737 people benefited from this project employment opportunity and among them 139 of them are women, this data is without the number of peoples working for the project from client/government and consultant side.

4.2.3 Contribution in the Housing Market

Helping citizens in becoming Landlords &Helping the housing market as a rental option were among the an unanticipated results of the condominium housing projects. The direct cost of the houses from AASHD and the current market price of these houses, the current market cost of condominium houses versus current cost of the real estate houses and rent of Houses under branch two projects are compared with the real-estate around same location and it is presented in table 4.5, 4.6 and 4.7 below.

In the table below the cost difference between direct AASHD prices with the current market price of the condominium houses in project 02 is discussed. As shown in Table 4.5 The type of condition that determine the cost of the condominium houses is the floor they are located in and weather they are done with finishing or not. The difference between the costs of the condominium housing with and without finishing is 500,000 birr.

Table 4.5 Cost comparison of 40/60 housing units direct from AASHD with the current selling market price of the condominium houses.

Cost of Housings	**1 bed room**	**2 bed room**	**3 bed room**
Average area in m^2	57 - 61	69-83	102-111
Average total cost of 40/60 condominium houses in project 2 from AASHD (birr)	658,615.23	848,385.72	1,188,856.31
Current market cost of 40/60 condominium houses in project 2(birr)	3 - 4.5 Million	4 - 6.5 Million	5 -7.5 Million

Referring Table 4.6 Hose and Noah are the type of real estates that are around this condominium houses, were the selling price for meter square ranging from 80000 up to 90000 birr. There is around 33 – 76% difference between the current market prices of condominium houses with that of real-estate houses.

Table 4.6 Purchasing cost comparison of 40/60 housing units from AASHD with real-estate housing units in areas where the condominium houses are located.

Current cost of Housings	**1 bed room**	**2 bed room**	**3 bed room**
Average area in m^2	57 - 61	69-83	102-111
40/60 condominium houses in project 2 (birr)	3 - 4.5 Million	4 - 6.5 Million	5 -7.5 Million
Average area in m^2	64	82	120-151
Real-estate costs around project 2 (birr)	5.5 Million	7 Million	9-13 Million

It can be seen from Table 4.7 the cost and the rent of the condominium houses is better or lesser than that of real-estate houses , this again shows how this housing types are helping citizens in providing an option in rental market in Ethiopia, Addis Ababa.

Table 4.7 Rent comparison of 40/60 housing units with real-estate housing units in areas where the condominium houses are located.

Rent Payments Of Units	**1 bed room**	**2 bed room**	**3 bed room**
40/60 condominium houses in project 2	8 – 12 Thousand	12 –15 Thousand	18 –25 Thousand
Apartment rental	21-23 Thousand	35 Thousand	> 35 Thousand

4.2.4 Built Environment Design

The term Built Environment refers to the human made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure such as water supply or energy networks. Ten percent of each condominium site is set aside for commercial use, mainly stores on the first and ground floors; these commercial units are sold rather than rented, according to Kidist (2014).

Observed benefits of commercial units under branch 02 condominium projects is Convenience, Having commercial units such as stores, restaurants, or pharmacies located underneath this building provides residents with easy access to essential services and amenities. Vibrant Community also can be stated one of the benefits observed in branch 02 projects, the mix of residential and commercial spaces created a lively and dynamic community atmosphere, offering a range of opportunities for social interaction and engagement. The presence of commercial spaces created job opportunities for local residents, contributing to economic development in the area.

From observation there is formal sports center in the neighborhood, there is a playground for basketball or football in bole ayat one site one and site two. There are People exercising in the morning on the streets the streets are also used to ride bicycles mostly by children. Walkways and small green areas within the compounds are valuable elements in promoting physical activity, relaxation, and community engagement. These features are available in some of the sites under branch 02 projects this provide safe and accessible spaces for residents to walk, run, and engage in physical activities contributing to their overall health and well-being.

Among the seven sites under project 02 bole ayat one site one, two, three and four are near to each other and the service functions provided there are the same, different types of banks and primary schools are available. The availability of this different banks and primary schools near the housing play an important factor in enhancing the convenience and desirability of the sites. Similarly, having primary schools nearby is beneficial for families with young children.

4.2.5 New Techniques or Technologies Used

Low-cost housing is an idea that focuses on efficient budgeting and adherence to methods that lower construction costs by using locally accessible materials and enhanced knowledge and technologies without compromising the structure's durability, strength and performance says sited on Civil Engineering Portal, (2008). The construction techniques used in project 02 is not that different from the other IHDP projects, the slab is constructed with prefabricated beam, which helps mainly in minimizing the carpenter work, concrete and reinforcement bar which makes it different from the conventional method of construction in Ethiopia.

4.3 The Underperformance Areas in the Housing Projects

4.3.1 Underperformance Regarding Transferring All the Constructed Blocks

Under the Table 4.4 comparisons of number of blocks constructed and number of blocks transferred is described, unlike Bole Ayat One Site Two, Bole Ayat One Site One and Meri Loke where all the constructed blocks are transferred there is a difference between the number of blocks constructed and the Number of blocks transferred in the remaining sites. for example in bole ayat one site four out of the 40 constructed housings only 34 of them are transferred the same goes to bole ayat two out of 50 blocks only13 of them are transferred.

4.3.2 Underperformance Regarding Cost

4.3.2.1 The Increment in Cost of the Housings

Ethiopians living abroad were welcome to participate in the 40/60 program; it also encouraged individuals who are able to deposit to pay in advance. The 40/60 group savings will have 5.5% interest over the course of five years and the loans which are due in seventeen years, will have 7.5% interest rather than the market rate of 9.5%. The Commercial Bank of Ethiopia (CBE) raised the initial price of 40/60 from 3,200 birr per square meter to 4,918 birr per square meter on the delivery date, according to the most recent statistics (2 Merkato, 2017). Table 4.8 shows the monthly installment and the three rounds per meter cost of 40/60 housing schemes.

Table 4.8 cost comparison of 40/60 housing units of different number of bed rooms between the three rounds.

40/60 lottery rounds /no of bed rooms	**First round prices**	**Second round prices**	**Last round prices**
	Cost/m^2 in birr		
1 bed room	4918	6922.14	11,162.97
2 bed room	4918	6922.14	11,162.97
3 bed room	4918	6922.14	11,162.97
Monthly installment in birr			
	First round prices	**Last round prices**	
1 bed room	-	5,278.89	
2 bed room	4,675	6,755.19	
3 bed room	5,651	9,461.74	

For the recent lottery winners which are the third time winners of the 40/60 housing scheme the housing cost per square meter increased to 11,162.97 birr and the loans are paid in 17 years just as the previous ones however the rate increased to 12%. The cost of the houses per square meter increased by 127% from that of the first round and the monthly installment for three bedroom housing also increased by 67%, this shows the price increment on the buyers in each round which makes affordability of these condominium houses questionable for the beneficiaries that it is intended for in

first place. According to (Selamawit, 2022) a study done by Goh betoch Bank (a bank that provide mortgage loans for customers to buy houses) the medium income in Ethiopia is 30,000 and above. Since these houses are intended for middle incomers and the middle income of Ethiopia being 30,000 monthly and with current inflation the monthly installment stated on table 4.8 will put in question the objective of the projects regarding being affordable houses to middle incomers.

4.3.2.2 *Financial Status of the Sites under the Project*

Referring the Table 4.9 the sites contract amount is compared with that of the executed amount. meri loki, site one, two, three and four Sites reports shows that they are above 98% in their physical status with however a significant remaining amount is shown in their contract amount, with some of the works in the contract not being accomplished or done.

Table 4.9 Financial status of the sites under project two of AAHDC

No	Site Name	Unit	Contract Amount	Executed Amount	Remaining Amount
1	**Site One**	**Birr**	153,641,976.36	129,606,958.86	24,035,017.50
2	**Site Two**	**Birr**	715,137,866.45	551,407,202.92	163,730,663.53
3	**Site Three**	**Birr**	616,257,497.32	465,197,860.43	151,059,636.89
4	**Meri-Loke**	**Birr**	480,402,900.78	368,666,529.17	111,736,371.61
5	**Site Four**	**Birr**	1,275,523,572.58	895,443,258.61	380,080,313.96
6	**Bole Ayat-2**	**Birr**	2,723,775,750.43	1,338,081,084.21	1,385,694,666.22
7	**Summit Site**	**Birr**	121,811,526.17	98,234,635.09	23,576,891.08
Total			**6,086,551,090.08**	**3,846,637,529.29**	**2,239,913,560.79**

4.3.2.3 Unreturned Advance Payment

Contract termination is the process of ending an ongoing agreement before all of its terms and conditions have been fulfilled by both parties. When a contract is terminated advance payments made by the client to the contractor were not fully returned under this project. Within branch 02 there are about 19 contractors that are terminated without retuning the amount of money they took for advance payment. This amount of money accounts to 92,034,989.85 birr in total according to the Project closing summary report made on September 2023.

4.3.3 Underperformance Regarding Time and Quality

4.3.3.1 The Time the Projects Took

According to the data taken in august 1 2023 for five sites (bole ayat one site one, two, three, four and meri loki) under project 02, a the contract duration and the elapsed time to date was calculated. They differentiate the contracts as main contract (which under it has the structural, block, roof, plastering and some finishing works), supplementary contract for wooden door, supplementary contract for electrical conduit and contract for site work. Since the data is taken for five different sites maximum and minimum elapsed dates are taken to calculate the average elapsed time so that to compare the schedule with the actual time it took, accordingly for main contract the average contract duration was 400 days and the maximum and minimum elapsed time is 2690 and 3206 days respectively, for supplementary wooden door contract the average contract duration is 60 days and the maximum and minimum elapsed is 1401 and 2277 days respectively and finally for site work agreements the average contract duration is 90 days and the maximum and minimum elapsed is 1680 and 1687 days respectively bearing in mind the this contracts are still undergoing and the works are not completed. In wooden door work, the initial work schedule estimate is 60 calendar days. But it increased to 1839 days, which is 2965% increment.

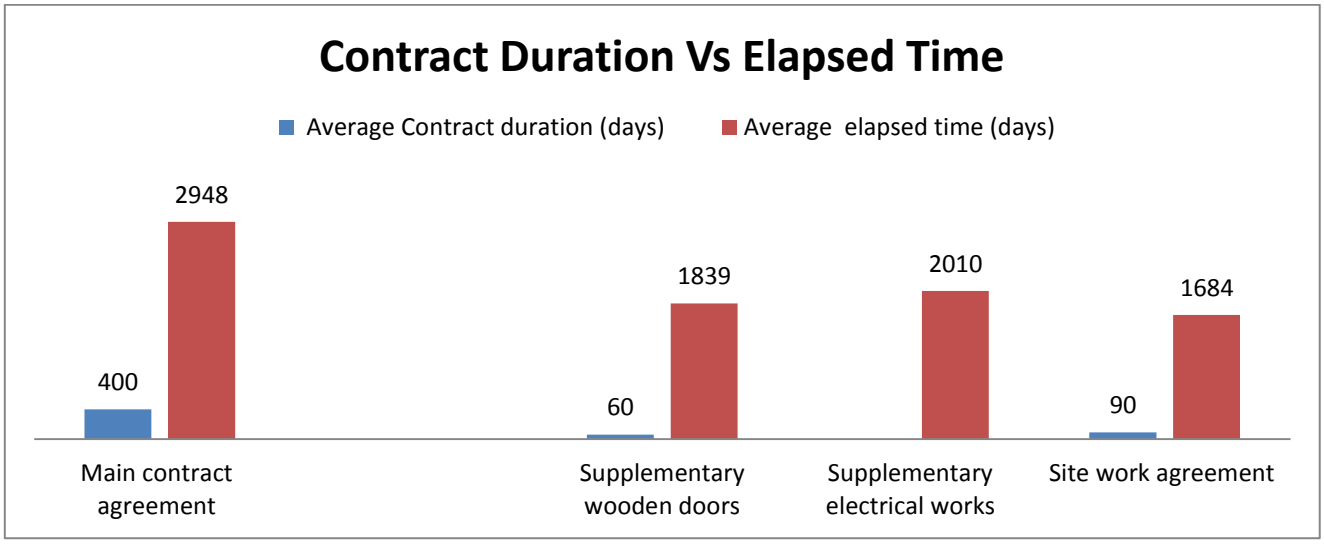

Figure 4.1 Comparison of contract and elapsed duration of the sites under project two of AAHDC

4.3.3.2 Quality and Poor workmanship

Although local experts and inhabitants question the accuracy of these projections, the units are predicted to last for 100 years (UN-Habitat, 2011). From observation on some blocks and an interview with lottery winners in these sites, water leakage, dampness and mold growth are among the common quality problems. Poor finishing, uneven surfaces and visible defects in paintwork, tiling and carpentry are the other common quality problems in project 02. from observation on some blocks and an interview with lottery winners malfunctioning water pipes, electric cables, cement screeds, wooden doors, floor ceramic and wall ceramic on kitchen and toilets are among the main items reworked by the beneficiaries when the houses are transferred. Water and electrical fixtures, ceramic for finishing work of toilet and kitchen wall and floor is provided by the corporation itself this puts in question the quality of materials since this are the common items mentioned as not standard by homeowners.

4.3.4 Underperformance Regarding Resource Utilization

4.3.4.1 Material consumption

Kidist (2014) claims that in order to reduce construction costs, the program has strict costing and quantity surveying procedures. MWUD is in charge of buying all building supplies in bulk, which enables them to do so at a discount. Because contractors are working under fixed-cost contracts, it is less difficult to obtain, receive, and choose bids for each project. Kidist also says this centralized system reduces waste, helps to maintain records for material supplies and distribution, and allows any excess materials to be used on other sites. It does this by calculating the material requirements for each condominium block and providing contractors with the precise material quantities. Additionally, these processes increase the confidence of the construction's ultimate cost.

From the actual data on material consumption of four sites (bole ayat project one site one, site two site three and meri loki) in this part of discussion, the standard material consumption calculated according to project office was computed with actual consumption and also the actual consumption is also compared with the amount of material first hand delivered by the housing corporation to contractors. The types of materials referred in this comparison are cement (opc and ppc), HCB (10 cm, 20 cm, 15 cm) and rebar (from 6-24 diameter), the data is collected from 61 blocks of 21 contractors and the typology of (B+G+8, B+G+10 and B+G+13) types.

For example the recorded data for let’s say block A is shown in the table below, the standard quantity(A) is 13,934.43 Qtl and the as built quantity(B) is 15,185.30 Qtl from this two crucial data the difference tells us the extra cement used other than what is stated on the standard quantity which is 1250.9Qtl. Similarly from the as built quantity (B) which is 15,185.3 Qtl and from the exact received quantity direct from AASHD which is 20,582 Qtl the difference tells us the extra cement amount given to the contractor other than what actually is used which is 5396.70 Qtl.

Table 4.10 Cement consumption comparison for one block

Material description		Unit	Standard quantity (A)	As Built quantity for (B)	Received quantity (C)	Difference (B-A)	Difference (C-B)
Cement	Opc	*Qtl*	13,934.43	15,185.30	20,582.00	1250.9	5396.7

Table 4.10 only shows data for one block similar calculation was done for 61 blocks and the data is presented as sum, mean, minimum and maximum amount in the next tables for type of material stated above.

4.3.4.1.1 Cement Consumption Comparison

Shown in Table 4.10 below from the total 61 observations, the highest extra cement used than the standard is around 3,833.83 Qtl and an average of 960.48 Qtl. and a maximum of 13,106.04 Qtl and an average of 5261.62 Qtl of extra cement quantity were given to the contractor by the government.

Table 4.11 Cement consumption comparison

Cement (Opc And Ppc)	Data	Sum	Mean	Std Dev	Min	Max
Standard Quantity versus As built Quantity in **Qtl**	61	19,209.54	960.48	1,096.44	1.10	3,833.83
As built Quantity versus Received Quantity in **Qtl**	61	104,109.09	5,261.62	3,336.06	91.29	13,106.04

4.3.4.1.2 HCB Consumption Comparison

Table 4.11 shows that, the highest extra hallow concrete block quantity used than the standard is around 185,661.9 pcs and an average of 22,276.39 pcs. And a maximum of 51,211.14pcs and an average of 17,138.64 pcs of extra hallow concrete blocks were given to the contractor by the government.

Table 4.12 HCB consumption comparison

Hcb (10 And 20 Cm)	**Data**	**Sum**	**Mean**	**Std Dev**	**Min**	**Max**
Standard Quantity versus As built Quantity in **Pcs**	61	311,869.4	22,276.39	51,667.51	2.00	185,661.9
As built Quantity versus Received Quantity in **Pcs**	61	359,458.90	17,138.64	14,178.26	1,274.81	51,211.14

4.3.4.1.3 Rebar consumption comparison

Table 4.12 result shows that, the highest extra Rebar quantity used than the standard is around 382,893.08 KG and an average of 175,800.26 KG. And a maximum of 557,512.87KG and an average of 206,882.83KG of extra Rebar were given to the contractor by the government.

Table 4.13 Rebar consumption comparison

Rebar	**Data**	**Sum**	**Mean**	**Std.Dev**	**Min**	**Max**
Standard Quantity versus As built Quantity in **KG**	61	1,406,402.12	175,800.26	128,421.90	34,773.44	382,893.08
As built Quantity versus Received Quantity in **KG**	61	1,499,303.00	206,882.83	189,400.08	845.31	557,512.87

4.4 Discussions on Factors Contributing to Underperformance of the Housing Projects

Shown in table 4.4 there are blocks that are built but not transferred referring to an interview with the employees of AASHD the reasons behind not transferring all blocks that are constructed is, some of them being not ready to be transferred because the construction work not being done yet while some of them are omitted from being transferred because of a management decision and government interest. To get an opinion of beneficiaries who are on the waiting list**,** the researcher interviewed two individuals who are on the waiting list of 40/60 housing lottery system who will be named as person A and person B for the ethics of this research. According to an interview conducted, Person A believes that the houses constructed are not transferred to beneficiaries as per the distribution criteria and she also believes that the houses are transferred to government officials. Person B also mentioned his concern and some doubt regarding the distribution process because he is aware that there are blocks/housing units that are constructed and not transferred.

According to the interview conducted with the beneficiaries who are on the waiting Person A chooses this housing type because it was intended to middle incomers and she considered herself as one on that period. However due to the increasing cost of the houses per meter square she is not sure if she can afford the houses if it goes beyond this. And person B chooses this housing type because of the quality and the cost being fair than other option. He stated that he paid the full amount at first that was mentioned as enough as the full amount by the government by that time and regarding the increasing cost of the houses he still thinks it is fair regarding the general per meter cost of other options.

According to Nehase (2006) E.C. in Amharic Monthly News Letter, 01 No. 31, the City Administration frequently transfers condominiums after 80 percent of the construction is finished, meaning lottery winners must wait a year or two after the announcement. this is the case for project 02 sites home owners, the lottery winners were announced on 2012 E.C and 2015 E.C however the post occupation or closing works are still being done, One explanation for the rising cost of the homes is that during these times, the cost of building and finishing materials went up for both the IHDP and the recipients, which had a financial impact on both.

According to UN-HABITAT, (2010) one attempt to address the cultural demands of the occupants of condominium plots was the creation of common buildings. The purpose of the communal buildings is to give inhabitants a safe place to carry out customary chores that the housing units themselves are unable to do, such as butchering goats, doing laundry by hand and preparing large feasts. Unfortunately from observation of this 40/60 housing projects under branch 02 communal buildings are not available, and Social events like Weddings and funerals are taken place in large outdoor tents this is allow larger gatherings by expanding the available space beyond indoor venues.

According to the interviews conducted with the employees of AASHD The Executed amount in a contract is less than that of contract amount because of changes requested by both parties, that lead the in alterations of the originally agreed-upon scope of work and these change resulted in adjustments to the contract amount. For example in bole ayat one site one, two, three and meri loke sites change orders like the concrete slabs being replaced or changed to precast, porcelain floor finishing being changed too cement screed are some the examples that could be mentioned and this was because

Unforeseen Expenses that were not accounted for in the initial contract. These expenses rose from unexpected technical difficulties, regulatory changes and market fluctuations. The other reason is overestimation of the work amount, when the original contract was prepared because the details of work to be executed on site were relatively unknown. Failing to meet their obligations as outlined in the contract is another reason, which resulted performance issues. For example a client fails to provide necessary resources on time led to additional costs, adjustments, omission and addition of work to the contract amount. ill work of contractors caused replacement of contractor by a new one which means replacement of contract by a new one with a new rate can be mentioned as another reason and finally incomplete works like painting and gypsum works decreased the amount of work done which in return decreased the executed amount.

According to an interview with AASHD employees one of the reasons why the advance payments are not paid back was because of the over estimation of work to be executed which increased the amount of advanced taken and also by contract management problem which is decreasing the percentage on which the advance payments are repaid. The Client/The consultants/contract Administrators not closely following the cases of terminated contractors/blocks effectively to get back the advance payment by assigning potential contract administrators and law professionals was mentioned as another reason.

The most frequent mentioned reason for the delays are delayed design, delayed contractor payments and early time estimates that are unrealistic compared to the actual work. The program having different objectives and trying to satisfy each also has been mentioned as one of the common cause for the this project to take this long which in return made management of the project very difficult because there are so many parties involved in material production, in construction, as a subcontractor and as a supplier. The direction followed by the government to supply material for the construction of the project, because the material delivery was not performed on time at different times made the projects to lag behind. And also lack of taking strong measures on those contractors who did not perform according to the contract, lack of contractor's capacity /finance, incapability of consultants, AAHDC management system which is individual oriented and the system or the bureaucracy changing with the political managers were also mentioned as a reason for the projects taking this long . According to the interview of peoples who are on the waiting list, Person A mentioned she have been waiting for the lottery for almost 11 years now starting from 2005 E.C.

The common quality problems are due to Leaking pipes, faulty fixtures, damaged or improperly installed roofs, improper installation of electrical wiring fixtures and plumbing systems. AASHED employees are aware that there were complaints regarding the quality of materials especially those manufactured and delivered by the small and the micro enterprises. They said there were measures to taste each material before being delivered on site but it wasn't effective as planned. According to the data gathered inappropriate connection of client employers with material suppliers and prioritizing money they get from the suppliers instead of the material quality as one of the causes for ill work. The responsibility for problems related to quality and poor workmanship in housing projects is distributed among various parties involved in the construction process according to the interview conducted to the employees of AASHD, First responsible agents mentioned was quality control personnel and

inspection teams which in this case were consultants and Architects and engineers were next. According to the interview conducted with owners of the houses contractors and subcontractors took the firsthand and Suppliers of construction materials and components were next.

According to the interview conducted with employees of AASHED the quantity different between the standard and the actual consumption were due to design modification and the reason for the difference in quantity among the materials given to the contractor by the government and actual consumption was the standard being not prepared back then, due to inefficient uses of material by contractors , in some cases due to robbery issues and also the change in supervisor in different times from the client side causing a gap in information. Among the taken materials by the contractors the returned back amount data was not available for the researcher however the interviewees stated that it's hard to say all the extra quantities are returned back because some of the materials provided were susceptible to wastage because of poor handling, some of them were used elsewhere by the contractor or sold for profit elsewhere. It's known that extra material taken by the contractor will be deducted from the final payments of the contractor however the gap in information might cause for one of the parties to pay extra or for one of the parties to lose money.

4.5The Post Occupation Issues or Observed Defects of the Housing Projects

Based on the conducted interviews and observation the post occupation issues or defects observed in branch two 40/60 project include:

- Malfunctioning electrical wiring, fixtures and plumbing installation systems are one the main issues raised by owners after they received their key and begun renovating, constructing houses and not having an access to electricity is inconvenience as people may not be able to use appliances or do other tasks that require electricity and this include food preparation and washing clothes, it's also financial loss for the shop owners because it's difficult to operate a business without power. And for those who have access to electricity the services stops when water enters in the basement this in return damages electrical wiring and equipment.

- Water Services are necessity for all as they are going to be used for drinking and sanitation purpose, in the case of 40/60 housing project two there is a delay in providing the service. Providing and Installing water tanker and water pipes were the obligation of the contractor it also stated in the contract agreement however there seems to be a delay in some of the sites and also delay in connecting the service with water and sewerage line offices is also one of the issues raised by the residents.

- Some Blocks have water in the basement in connection with the rainy season and this can be caused by number of factors including improper drainage, leaks in foundation and flooding, Rework regarding Water outlet and cross drainage works are amongst the issues raised by owners. And in some of the blocks the water caused a mold growth which can further damage the buildings and pose a health hazard to occupants.

- Nonfunctioning or unavailable Sewerage lines that are used to collect and transport wastewater from sinks, toilets, showers, and other plumbing fixtures to the municipal sewer system. This sewerage lines are important because they remove waste and prevent it from accumulating in the living spaces, ensuring a clean and sanitary environment for residents. Damaged joint drain lines manholes and manhole covers is also an issue in 40/60 housing project two branch, manholes are an essential part of an infrastructure they help to keep a site to run smoothly. Because of Damaged manholes underground utilities such as sewer lines are not safe and secured and also difficult to access.

- The work of removing surplus products from around the buildings is one of the issues raised by residents in project two, though the contractor is responsible for such work in some sites the contractors refused to do so and the reason for that is they claim they remove the surplus material which belongs to them in first place and the surplus material that is available in site now is the responsibility of the occupants from renovating there houses. Wastes such as screed works, ceramic works, electrical and sanitary works can be observed in these surplus materials. These surplus materials are unhealthy for residents that leave there and also not aesthetic as it lowers the standards of the housings.

- The sites are constructed in peripheral part of Addis Ababa, There was an access to public buses but there is not enough to meet the demand and in addition to the long queue the cost of the transportation is high which makes it difficult to afford. And also there is an increase in traffic congestion in the morning and afternoon this make it difficult to get around.

- Site work has reached an average of 72% in its financial progress in some sites however Problems regarding around pavement and car entrance works, incomplete parking areas, walkway areas and green areas are amongst the issues raised by the residents.

4.6 Summary the Housing Projects Performance Using KPI

The performance of the housings is measured using Key performance indicators (KPI).With so many moving parts and stakeholders involved, having clear metrics and key performance indicators (KPIs) in place is crucial for measuring progress, identifying problems early, and driving better overall performance.

Table 4.14 Summary the housing projects performance using KPI

Item no	Key project performance indicators	Findings
1	Cost performance	The Executed amount in a contract is less than that of contract amount with some of the work items stated on the contract remaining. There is also quantity difference between the material given to the contractor and the actual material consumption which will result for one of the parties to pay extra money.
2	Time performance	There is a Delay between what is stated on the contract and the elapsed time and also there is a delay in transferring these houses to the home owners.
3	Quality performance	There is an issue regarding quality of delivered materials. Water leakage, dampness Poor finishing, uneven surfaces are among the common quality problems.
4	Defects	Malfunctioning electrical wiring, fixtures and plumbing installation systems, Installing water tanker and water pipes connecting the service with water and sewerage line and Nonfunctioning or unavailable Sewerage lines Problems and also unfinished around pavement and car entrance works
5	Social impact assessments	Vibrant Community Because of the mix of residential and commercial spaces, The presence of green spaces and formal sports center in the neighborhood are among the results of these assessments.
6	Client satisfaction	Clients are happy regarding becoming a home owner however the rising cost of the monthly installment, the delay in receiving there key, ill quality of some of the works, some defects in post occupation of the houses and also the high demand of Transportation are among the issues raised by the clients.
7	safety	Safety is mainly about the projects performance while in construction and this data was not available.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The general objective of the research is to study the performance of the housing projects: a post project evaluation of branch two 40/60 housing project in Ethiopia. Interviews, questioners and site observations were conducted to study the sites background, to compare the anticipated objectives with the actual achievements, to identify the challenges faced during execution of this objectives and finally to state the impacts of the failed goals. The following conclusions are drawn from the study:

a) The first objective of this study was to study the best performances of housing projects regarding the intended goals set at first and the findings shows that Sites under project 02 created jobs and contributed in reducing unemployment, promoted the development of small enterprises and enhanced the capacity of contractors. There is also 400% cost difference between direct AASHD prices of the housings with that of current market price, considering inflation it still helps landlords in creating wealth. There is also price difference in rent and purchasing cost of this 40/60 condominium housings with that of real-estate houses in that area, these show how this 40/60 condominium housings can be an option for the peoples who can't afford the rent and the cost of real-estate apartments. While people may have various reasons for purchasing real estate, those seeking more affordable options for buying an apartment should defiantly consider these housings. Vibrant Community also can be stated one of the benefits observed in branch 02 projects, the mix of residential and commercial spaces created a lively and dynamic community atmosphere, And also the presence of green spaces offers opportunities for relaxation, social interaction and a connection with nature, which can have positive effects on mental and emotional well-being. And also access to multiple banks within close proximity provides residents with a range of financial services, including banking, ATMs, and other financial transactions and this save time and effort for residents, making it easier to manage their finances.

b) The second objective focused on identifying areas of underperformance in the housing projects and the research shows there is a difference between the number of blocks constructed and transferred in the some of the sites, it also shows the price increment on the buyers in each round which makes affordability of these condominium houses questionable for the beneficiaries that it is intended for in first place. This research shows that there is a significant remaining amount in the contract amount, with some of the works in the contract not being accomplished or done. Within branch 02 there are about 19 contractors that are terminated without retuning the amount of money they took for advance payment. This projects show delay from what is stated in the contract for example for main contract the average contract duration was 400 days however from the collected data the minimum elapsed time is 2690 days. Water leakage, dampness and mold growth are among the common quality problems observed in these projects. There is a quantity difference between the standard and the actual consumption and also quantity among the materials given to the contractor by the government and actual consumption.

c) In investigating the factors contributing to underperformance of the housing projects, it is found that some of the housing projects not being transferred is because of the construction work not being done yet and because of a management decision and government interest and also one explanation for the rising cost of the homes is that through time, the cost of building and finishing materials went up for both the IHDP and the recipients which had a financial impact on both. The Executed amount in a contract is less than that of contract amount because of the reasons like changes in scope, unforeseen expenses and performance issues. And also reasons like over estimation of work, contract management problem, administrators not following the cases of terminated contractors effectively was mentioned as reasons for the advance payments to be not returned fully. Lack of taking strong measures on those contractors who did not perform according to the contract, lack of contractor's capacity /finance, incapability of consultants, AAHDC management system which is individual oriented and the system or the bureaucracy changing with the political managers were among the mentioned reasons for the project to taking this long. And finally for the difference in quantity among the materials given to the contractor by the government and actual consumption according to interview conducted was due to design modification, ineffective data collection method and poor contract administration and material administration system.

d) In identifying the post occupation issues or defects of the housing projects, Malfunctioning electrical wiring, fixtures and plumbing installation systems, water Services , water in the basement in connection with the rainy season, Nonfunctioning or unavailable Sewerage lines, surplus products around the buildings, Problems regarding around pavement and car entrance works, incomplete parking areas, walkway areas and green areas are amongst the post occupancy issues raised by the residents. The responsibility for problems related to quality and poor workmanship in housing projects is distributed among various parties involved in the construction process according to the interview conducted to the employees of AASHD.

5.2 Recommendations

From the drawn conclusions the following recommendations are forwarded:

a) To prevent the inappropriate transfer of houses for others instead of those for whom they were originally intended could be to establish strict guidelines and oversight mechanisms to ensure that such transfers are based on genuine need and eligibility criteria. Additionally, implementing transparency measures and public accountability can help deter any misuse of housing resources and ensure that they are allocated fairly and ethically.

b) One way to address price increments is to implementing price stabilization measures. This could include setting a cap on price increases between rounds of sales or implementing a pricing formula that takes into account factors such as inflation, construction costs, and market conditions to ensure that prices remain within a reasonable range. Another recommendation is to increase transparency and communication with buyers about pricing policies, potential price increases, and available financial assistance options can help manage expectations and empower buyers to make informed decisions about their housing purchase.

c) To address the discrepancy between the executed amount in a contract and the contract amount due to changes in scope, unforeseen expenses, and performance issues is to address overestimation of work and contract management issues. It is important to ensure the scope of work is accurately defined and realistic cost estimates are provided. Additionally, implementing effective project management practices and regular performance evaluations can help identify and address any issues that may lead to discrepancy between the executed amount in a contract and the contract amount or poor contract management.

d) In order to address the issue of administrators not effectively following cases of terminated contractors or blocks, it is essential to establish clear protocols for handling terminations and ensuring that advance payments are properly accounted for and refunded in accordance with the terms of the contract. This involve improving oversight and accountability within the contract administration process, as well as providing training and support for administrators to effectively manage terminated contracts and finally hiring a legal team for this task only according to employee of AASHD.

e) When problems related to quality and poor workmanship arise, a collaborative effort among stakeholders is needed to identify the root causes, rectify the issues, and prevents similar problems in future projects. Legal contracts, warranties, and insurance policies may also dictate specific responsibilities in addressing workmanship issues.

f) Enhanced Data Collection Methods by Utilizing advanced data collection methods, such as digital tracking systems or automated inventory management tools, to accurately monitor and record material consumption throughout the project will help in identifying any discrepancies early on and enable timely corrective actions. Improved Material Administration System so that

to implement a more efficient material administration system that tracks the movement of materials from procurement to consumption by Utilizing technology to streamline material tracking processes and ensure accurate reporting of material quantities used by the contractor. And at last conducting regular audits and reviews of material usage to identify areas of improvement and address any discrepancies promptly. This will help in maintaining transparency and accountability in material management practices.

g) And finally considering the private sector in the housing projects can be beneficial for different reasons for example it can be by providing significant financial resources that are lacking in public funding and also in catering to various market segments meaning in providing a range of housing options from affordable to luxury.

5.3 Suggestion for future studies

This research primarily relies on primary data collected from project reports and interviews with key stakeholders involved in the housing projects and other individuals with relevant expertise. Additionally feedback was gathered from small number of customers currently residing in the projects and also who are on the waiting list, as well as insights from few local brokers. However, the research contains limited sample size so it is important in further research a larger dataset is necessary to draw more definitive conclusion. Therefor for future studies it is essential to expand the sample size significantly to include a broader demographic of customers and stakeholders. This will enhance the reliability and validity of the findings and provide a more robust understanding of the performance metrics associated with housing projects.

In addition, the followings are some areas recommended for further studies.

- The impact of regulatory formworks on the performance of housing projects.
- The effect of risk management strategies in mitigating the under performance of the housing projects.

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APPENDIX

APPENDIX A

Dear sir/Madam

I am undertaking a research project on the topic "A Study on the performance of Housing Projects: A Post Project Evaluation of branch two 40/60 Housing Project in Ethiopia "to fulfill the partial requirements for Master of Engineering in Civil Engineering (Construction Management and Technology), Addis Ababa University. To this end, I kindly request you to respond freely interviews regarding the condominium housing which you were somehow involved in as an employee or owner/waiting for the lottery. No more than ten minutes of your time should be required. Your involvement in this study is completely voluntary, even though I value your feedback much. Unless you specify otherwise, any information you submit will be kept private and reported in summary form only. If you have any queries or comments regarding this research, you are most welcome to contact me using a phone number at 0921-40-12-74 or e-mail at woldehelen203@gmail.com.

With best regards

Helen W/Selassie

Addis Ababa

Interview Questions

For Employees of AAHDC

1. In your view does the program attain its objectives in terms of availing better housing at Reasonable payments for the low and middle income people?

2. Among all blocks under project 02 only few of them are transferred to beneficiaries what is the reason behind not transferring them all?

3. Reports under project 02 shows that there is a difference between the contract and executed amount what is the reason behind it?

4. Data under project 02 shows advance payment taken by terminated blocks that is not paid back what is the reason for that? Is there any means that the amount taken could be paid off by now?

5. What's the reason behind the project taking this long? What is the solution for this not to happen again?

6. What's the reason behind the difference in material consumption with the standard material quantity and the materials delivered by the government to a contractor? What are the main effects observed because of this? What could be mentioned as possible solution for this?

7. What's your take on materials you provide being low quality, are you aware of it? Is there a solution planned for it?

8. What are the common post occupancy issues that are observed and raised by the residents after they receive full access to their home?

9. Is there any type of new technologies used to implement these particular projects?

10. Do you believe that all of the condominiums that have been built until now have been given to the designated recipients in accordance with the distribution criteria?

For 40/60 beneficiaries who are on the waiting list

1. Why do you choose the 40/60 housing type?

2. How long have you been waiting for this opportunity? Are you hopeful the program will address your need?

3. Do you believe that all of the condominiums that have been built so far were given to the specified recipients in accordance with the distribution criteria?

4. Do you think you can still afford the increasing cost of the housing per m^2? What's your opinion about the initial and the now cost difference?

For 40/60 lottery winners under sites of branch 02

1. How long do you have to wait to gain access to start renovation after being announced winners, what do you say about the cost difference with in those years and what should be done as solution?

2. What kind of quality defects and poor workmanship works did you observe in your house that you had to do it again and who do you think is the responsible agent behind it?

4. What do you think of the site's constructed environment in particular? This includes the following: health center, elementary and secondary schools, religious centers, banks, fire departments, telecommunications, transportation, markets, sports centers, and social gatherings and activities like weddings and funerals. Additionally, there are business and employment opportunities within and around the estate, as well as a recreational center. What do you think should be done to help address these issues both now and in the future?

APPENDIX B

Broker's Questionnaire

1. **Name_____ Sex_____ Age____**

2. What is the price/rent of a 1 bed room condominium/apartment in bole ayat area?

	condominium	apartment
Rent		
Purchase		

3. What is the price/rent of a 2 bed room condominium/apartment in bole ayat area?

	condominium	apartment
Rent		
Purchase		

4. What is the price/rent of a 3 bed room condominium/apartment in bole ayat area?

	condominium	apartment
Rent		
Purchase		

5. What determines housing price and rent in bole ayat condominium?