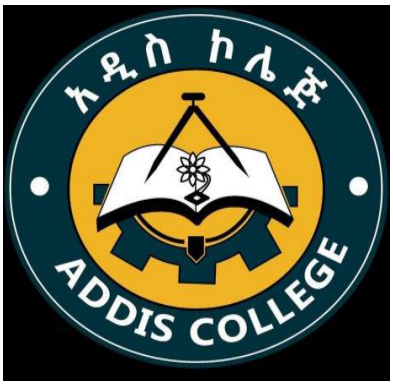

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ASSESSMENT OF THE SATISFACTION OF CONDOMINIUM HOUSING USERS IN THE CASE OF BOLE ARABSA SITE 6.

BY

ASHAGIR CHEBUD WODAJ

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE IN THE PARTIAL FULFILMENT OF THE REQUIREMENTS OF MASTERS OF SCIENCE IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT

ADDIS ABABA, ETHIOPIA

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ADVISOR: - AKLILU ASFAW (PhD)

ADDIS ABABA, ETHIOPIA

OCTOBER, 2024

CERTIFICATION

This is to certify that "Ashagir Chebud Wodaj" had carried out his study on the topic entitled "Assessment of Customer Satisfaction on Condominium Houses Transferred to Residents in Addis Ababa in Case of Bole Arabsa site 6," under my supervision. The work is original and is appropriate for the award degree of the Masters of Science in Construction Technology and Management.

Name of Advisor: Aklilu Asfaw (PhD). Signature:  **Date: ___/___/2024**

As members of the Board of Examiners of the dissertation, Open Defense Examination, we certify that we have read, and evaluated the MSc thesis prepared by Ashagir Chebud Wodaj and examined the candidate. We recommended that the thesis be accepted as fulfilling the thesis requirement for the MSc degree.

Approval of Board of Examiners:

	Name	Signature	Date
Chairperson	_____	_____	_____
External Examiner	_____	_____	_____
Internal Examiner	_____	_____	_____
School Dean	_____	_____	_____

DECLARATION

"I, Ashagir Chebud Wodaj, declare that this research paper on the topic of Assessment of Customer Satisfaction on Condominium Houses Transferred to Residents in Addis Ababa in Case of Bole Arabsa site 6 was completely a result of my work and has not been presented for by any other person. I have carried out the paper independently with the support and guidance of the research advisor **Aklilu Asfaw (PhD).**

Signature Date

_____ _____

ACKNOWLEDGEMENT

Above all, I would like to thank God for giving me strength and patience from the beginning up to now in my life. I wish to express my gratitude to my advisor, Dr. Engineer Aklilu Asfaw, for his efforts, useful suggestions, and encouragement, which provided valuable guidance.

I also forward special thanks to ADDIS ABABA HOUSING CORPORATION STAF AND ARABSA SITE 6 HOUSE OWNERS, for providing all the necessary and required data. I am thankful to my family and all my friends for their great support all the time and for giving me confidence every once in a while, without their support the research work would be impossible.

Finally, I wish to thank all those who have helped me in one way or another during this research.

ABSTRACT

Housing is a basic human necessity that is universally acknowledged as being extremely vital and a valuable economic resource in every nation. It serves as both the basic foundation for human habitation and the founding element of a community. Given Addis Ababa's current circumstances, it is clear that Ethiopia is experiencing a serious housing problem in its urban areas. In response to this serious issue, the Addis Ababa city administration has made the Integrated Housing Development Program (IHDP) as a major policy focus. The local government is dedicated to resolving the middle-class and lower-class housing issues as a result. The objective of this research is to assess the satisfaction of condominium housing users in Bole Arabsa site 6. Using stratified random sampling technique, 280 samples were identified. Two hundred sixty-one (261) questionnaires were successfully returned & used for analysis, yielding about 93% response rates. Data was collected by questionary, interview and field survey from the residents. Data were feed to version 2024 SPSS computer program and analyzed using descriptive and inferential statistics. The study found that there is a clear difference in residences' contract floor area compared to what exists on site. This leads to a wide range of satisfaction concerning the floor area. The study also found that a small percentage of condo owners are typically dissatisfied with Addis Ababa's physical attributes and aspects pertaining to the physical units, particularly in the Bole Arabsa 6 location. Additionally, the investigation's findings indicate that the following causes contribute to customer dissatisfaction: a shortage of human resources; lack of expertise and experience; and design alteration. It is advised to take steps to raise the degree of satisfaction, including strengthening the construction management system, putting in place strict regulations, and altering the delivery system.

Key words*: - floor area, physical units, condominium, customer satisfaction, key factor.*

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AAHDPC	Addis Ababa Housing Development Project Corporation
A. A	Addis Ababa
FDRE	Federal democratic republic of Ethiopia
SPSS	Statistical Package for Social Sciences
ACSI	American Customer Satisfaction Index
VIF	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Everyone can agree that one of the most important needs in life is housing, which is also a significant economic asset in every country. It is among the most fundamental requirements of people. It is the fundamental building block of human habitation and the initial unit of a society. According to the study made by Lisanework (2015), stable communities and social inclusion are based on having enough housing. Numerous studies have established that everyone has the fundamental right to shelter, that all civilized societies should provide enough housing for those in need of it, and that this is one of the standards by which development is measured. Enhancing the adequacy of housing to meet the demands of its owners is the ultimate goal of any housing program, as housing is unquestionably a right of every individual and a significant public investment. Aspects of housing include social, communal, comfort, and quality amenities. All the utilities and social services that go into creating a habitable community or neighborhood are collectively referred to as housing (Mekonnen, 2017).

Since 2005, Ethiopia has been implementing an ambitious government-led low- and middle-income housing program: The Integrated Housing Development Program (IHDP). The initial goal of the program was to construct 400,000 condominium units, create 200,000 jobs, promote the development of 10,000 micro - and small - enterprises, enhance the capacity of the construction sector, regenerate inner-city slum areas, and promote homeownership for low-income households (Haregewoin, 2007)

According to A.A Construction & Housing Development Bureau Housing construction & infrastructure feasibility study (2013), the Housing Problem in Addis Ababa can be characterized as: -

- Housing shortage especially for low-income group.
- Lack of basic infrastructure such as water, road, sanitation, etc
- Poor quality of housing and old houses.

- Poor living and working environment, which contributed to low productivity.
- Limited access of land.
- Lack of housing finance and affordable housing policy.

The prominent current government approach to solving the low-income housing challenge is the Integrated Housing Development Program (IHDP), initiated by the Ministry of Works and Urban Development (MWUD) in 2005. The Program is a continuation of the 'Addis Ababa Grand Housing Program' which supported the endeavors of the Ethiopian Government in their implementation of the 'Plan for Accelerated and Sustained Development to End Poverty' (PASDEP).

According to the study performed by Lepkova and Butkiene (2016), Unlike other items, real estate prices are influenced by a variety of factors, including market competitiveness, supply and demand, the caliber of building materials and services, the ability of buyers and sellers to negotiate a price, and the parties' overall happiness. Constant and good communication with customers is a source of both advantages and threats; mutual trust and cooperation between the parties is, therefore, paramount. Appropriate management of all processes is necessary in order to ensure good relationships with customers during construction projects.

The need to raise the standard of building quality and customer satisfaction has been more pressing recently. The most significant indicator of housing quality among the objective and subjective dimensions is resident satisfaction; the better the building, the more satisfied its occupants should be expected to be. Construction companies started emphasizing the importance of customer satisfaction (Tekelehaimanot, 2015). Traditional measuring techniques, such as regulated product quality, are too simple to assess the environment and the result of a construction project. The concept of customer satisfaction states that a project can be successful only when it satisfies the needs of current and future customers, the main needs being quality, time and cost effectiveness.

The construction industry is significantly different from other industries in that it is transient, one-of-a-kind, specialized, and exclusive, making customer satisfaction management in this sector difficult and indirect. Customers view this industry differently than others because most construction projects are exclusive; as a result, comparable instances are more difficult to find, and

it might also be difficult to refer to a prior customer satisfaction survey later on (AL-Haddad et al., 2020). The quality of construction products and services, as well as the success of the entire project, depend on the parties involved in the process such as the customers, the architect, the builder, on fulfilled expectations, and on ongoing quality improvement. Better work performed by principals, contractors and subcontractors is maintained as the reason behind improved customer satisfaction and better reputation, which, in turn, ensures competitiveness in the market. An organization must regularly assess customer satisfaction to find out the level of satisfaction among its customers. The level of customer satisfaction in construction becomes clear only in the final phases of a construction project (Lepkova et al., 2016).

A study made by Lisanework (2015) tried to assess condominium housing projects in terms of affordability of condominium houses, cost, time, quality and public services. However, condominium house user satisfaction was not basically investigated yet. Therefore, in this study the overall condominium housing user satisfaction is assessed

1.2. Statement of the Problem

A robust relationship has been demonstrated between housing, well-being, productivity, socioeconomic advancement, and customer satisfaction. Additionally, it has been noted that a person's physical and mental health are significantly correlated with their living circumstances (Lisanework, 2015). Humans have a fundamental right to housing, and any civilized society should guarantee adequate accommodation to everyone who needs it. It should also be one of the standards used to assess development. Housing has been shown to have a significant impact on people's overall welfare, social behavior, efficiency, health, and satisfaction.

In Addis Ababa city government, the cause for major prevailing complaints was unfulfilled needs or the existence of housing deficit among households. The high complaint rate towards housing will pose a negative impact on the well-being of a family (Husna & Nurizan, 1987).

The severe housing crisis in Ethiopia's urban centers is evident, especially when one considers Addis Ababa's actual situation. The Integrated Housing Development Program (IHDP) has emerged as a key policy concern in the Addis Ababa city administration in response to this pressing issue. To this effect the city administration has been committed to overcome the housing problem of the middle- and lower-income groups. According to the study made by Tekelehaimanot (2015).

The FDRE condominium proclamation number 370/2003 makes it abundantly evident that a body should be formed to oversee the post-transfer condos and function as a representative of all condominium dwelling unit owners while using shared amenities.

There were complaints raised by condominium housing owners (residents) regarding the design, the situations of physical feature of housing unit, the services provided within the housing area, the public facilities provided within the housing area and security of the social environment within the housing area (Addis Ababa Housing Development & Administration Agency Annual Report 2015).

It is known that, there is no clear information about the method of area measurement applied in condominium house. Also, there was no clear information and research about the condominium house owner satisfaction. Therefore, the objective of this study is to assess condominium house owner (user) satisfaction.

1.3. Objective of the study

1.3.1. General objective

The general objective of the research is assessment of the satisfaction of condominium housing owners in Addis Ababa in the case of Bolle Arabsa site 6.

1.3.2. Specific objectives

Having described the general objective, the specific objectives of the research are:

1. To evaluate the existing level of condominium house owners' satisfaction.
2. To study the extent and effect of resident house area and common area provided in the parcel on condominium house owners' satisfaction.
3. To determine key factors that affect the satisfaction of condominium house owners.

1.4 Research Questions

1. What is the current level of condominium house owners' satisfaction?
2. What are the key factors that can determine condominium house owners' satisfaction?
3. What is the effect of resident house area on condominium housing users' satisfaction?
4. What is the influence of common area provided in the parcel on the satisfaction of condominium house owners?

1.5 Scope of the Study

It was impossible to cover all the condominium sites that were built and habitable to beneficiaries in Addis Ababa city due to various reasons. Therefore, to make the research achievable and accessible to the researcher Arabs condominium site 6 was selected. Geographically the condominium site is located in Addis Ababa, Lemi Kura Sub city. This site was selected because it is an ongoing project where users were interacting to the project and there were a lot of resident numbers compared to other sites available in Addis Ababa.

The thematic scope of the study focuses on measuring the satisfaction level of the condominium owner satisfaction, identifying key factors that affect house owner satisfaction, and show the effect of floor area difference on house owner satisfaction.

1.6. Significance of the Study

In Ethiopia's major areas, particularly Addis Ababa, there is a severe client's claim regarding the net floor area transferred and other factors that affect customer satisfaction. It is also observed that there are indicators on the building about physical characteristics and physical unites that needs consideration to improve resident satisfaction. The housing development program has grown to be one of the main policy concerns in Addis Ababa in order to address this serious issue. To this end, the local government has pledged to use this program to address the issue facing claims and grievances Yet, the initiative has encountered numerous difficulties along the way. These difficulties are becoming roadblocks in the way of achieving the intended goals. One of the issues is citizen complaints about the use, administration, net floor area transferred to the house residents and interests of post-transfer communal services. As a result, the Addis Ababa city administration must address this crucial issue of good governance. Consequently, this study provides a road map for customer satisfaction by providing solutions for the issues. It also helps identify, and provide a solution for the issues in addition to its academic significance.

1.7. Organization of the Paper

This study contains five chapters. Chapter One deals with the introduction, which talks about the general idea and relevance of the study. It defines the background, the statement of the problem, the objectives, the scope and the limitations of the study as well as the organizational of the thesis. Chapter Two comprises of literature review, and quotes the various related works done in this area of study. Chapter Three attempts to describe in detail the materials and methods of the project

followed in this assessment study. Chapter Four contains results and discussion and chapter five attempts the conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

In this chapter theoretical and empirical reviews on customer satisfaction were discussed. In the theoretical reviews, terms related to customer satisfaction, causes for customer satisfaction, factors that affect customer satisfaction and related issues are presented. In the empirical review, detailed research works of other related literature have been presented. Finally, the conceptual framework of the research is presented.

2.1 Theoretical review

2.1.1 Definitions

2.1.1.1 Satisfaction

Oliver (1981) defined satisfaction as "a summary of psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience", as cited in Meaza (2013). Kotler (2000) defined satisfaction "as a person's feelings of pleasure or disappointment resulting from comparing a product perceived performance (outcome) in relation to his or her expectations" as cited in Meaza (2013). According to Hansemark and Alibinsson (2004) cited in Meaza (2013) "satisfaction is an overall customer attitude towards a service provider, or an emotional reaction to the difference between what customers anticipate and what they receive, regarding the fulfillment of some need, goal or desires".

Satisfaction with housing situations indicated that lack of complaints and an extent of a match between actual and desired situations, while a mismatch between current housing and desired conditions could lead to dissatisfaction (Mohit et.al., 2010). Thus, individual becomes dissatisfied; if it does not achieve its desired housing situation and it influences housing adjustment (Morris & Winter, 1975) as cited in Ado et al. (2014).

2.1.1.2 Housing

As many scholars have defined housing to mean several things and most especially to suit their understanding. For instance, housing has been defined as a permanent structure for human habitation (Wahab, 1983). It is also referred to as the house and defined as a home, building or

structure that is a dwelling or place for habitation by human beings. According to Jiboye (2010) housing is any type of permanent shelter for man, which gives him an identity.

As defined in UN-Habitat Global Housing Strategy Framework Document the term “housing” is used at a number of levels and is a multi-dimensional concept. It refers to the activity, a process of residing, as well as to the objects of dwellings and their environment. The main attributes of housing as a dwelling are its location (determining access to livelihood), tenure arrangements, cost and physical structure. Housing is a physical structure as well as social structure, functioning at different spatial scales (homes, neighborhoods, cities and other settlements, regions and countries). It is also a sector of the economy and an important category of land use in cities and in other settlements. Linkages with the national economy and with the overall urban system are an integral part of the understanding of the concept of housing. The meaning of housing is similar to, but broader than, the meaning of the word shelter as used in the Habitat Agenda and in the Global Strategy for Shelter to the Year 2000.

Housing defined as “the space that we can call our own, that gives us privacy and shelters us from the weather and intrusions of unwanted people (Godwin, 1997)”. It embraces all the social services and utility that goes to make a community or neighborhood a livable environment.

2.1.2 The Theory of Condo-Communal Services

This model's main idea is communality, which is the idea that everyone owns and controls property and wealth on an equal footing and produces benefits that are distributed equally. Communities at the global level emerge as a result of chances for individuals to have a common political, economic, social, cultural, and philosophical identity as they collaborate and work together (David, 2018). More than private ownership and consumerism, communal sharing might lessen the strain on the planet's natural resources as the world's population grows. The public properties and services surrounding and inside condominium housing are owned in common, according to the theoretical framework of condominium communal service. Housing initiatives can ensure economic development since they enable the unemployed to participate and give themselves a chance. Investment in housing is crucial for socioeconomic and political development (Tiumelissan & Pankhurst, 2013).

2.1.3 Housing and Housing management

2.1.3.1 Housing

One of the basic human needs, along with food and water, is shelter or housing. As the population grows, this need becomes more and more pressing, necessitating attention and the development of policy frameworks. Housing is obviously essential to improving everyone's health and quality of life, and it can also be a factor in the creation of jobs, the mobilization of capital, and social security (Yohannes & Dinku, 2018). Government housing policies can have an impact on a nation's development goals, such as reducing poverty and maintaining fairness among its population. The reasoning behind the right to appropriate housing encompasses actions required to stop homelessness, outlaw forced evictions, deal with discrimination, prioritize the most marginalized and vulnerable populations, provide everyone with security of tenancy, and ensure that everyone has access to suitable housing (Tesfaye, 2005). Government action may be necessary for these measures at different levels, including legislative, administrative, policy, and expenditure priorities. By taking an enabling approach to housing, the government can provide housing by acting as a facilitator for everyone involved in the creation and enhancement of shelter, as opposed to acting as a housing provider.

The exercise of economic, political, and administrative power to oversee a nation's activities at all levels is known as governance, according (Tekelehaimanot, 2015). It includes all of the systems, procedures, and establishments that enable individuals and communities to express their concerns, assert their legal rights, fulfill their responsibilities, and settle disputes. Nonetheless, access to community and credit services, security of tenancy, fair access to property, and the entitlement to adequate housing are some indicators of housing governance.

2.1.4 Condominium Housing

Condominium housing, to put it broadly, is an apartment building where people reside but where the building owns each apartment and communal areas used by all. In this case, the concept includes urban low- and middle-class homes constructed by government agencies. In a similar vein, condominiums are homes owned by individual units that share common areas and building amenities equally. Since many people can live in high-rise homes on a limited amount of urban space and utilize shared amenities, it enables the efficient use of urban land. It can also help to preserve attractive metropolitan regions. The building of condominiums creates money and work

prospects. As housing is improved, other linked industries, such as that of cement, ceramics, wood, steel, and other materials, may expand. Because there is little mechanization in the construction process and most of the building materials used are manufactured locally, the construction of condominiums is labor-intensive and mostly employs unskilled and semiskilled labor. These building materials are typically found in low-income housing (Tadashi & Jonathan, 2015).

2.1.5 Customer satisfaction

The growth of the construction process and the customer relationship are significantly influenced by customer satisfaction. Construction companies are facing more competition, and maintaining good customer relations and happy consumers is becoming more important. Construction companies may be able to stand out from the competition and gain a long-term advantage if their customers are satisfied. In their quest to raise quality in a cutthroat industry, construction companies now list satisfaction as one of their concerns (Karunasena & Ranatunga, 2009).

Businesses can effectively differentiate themselves from rivals and obtain a competitive advantage by focusing on customer happiness. Customer satisfaction benefits construction companies in the following ways: it fosters better communication and mutual understanding between parties; it highlights the need to improve process quality; it helps them understand problems better; it allows them to assess progress toward goals; it manages and reports on results achieved; it opens up opportunities for change; it increases sales; satisfied customers and their loyalty; and it enhances the company's reputation (Lisanework, 2015).

According to Gunning (2000) the term "customer satisfaction" is still lacking a widely accepted definition. When performance satisfies expectations, customers are considered to be satisfied. The general reaction of the consumer to a specific product buying experience is referred to as consumer satisfaction. In the construction industry, the end user may be a customer of goods and services. Consumers in the construction sector are not like those in other sectors; their primary deficiency is inexperience. Customers are compelled to evaluate solely the caliber of the services rendered and the finished product since they lack the necessary resources, expertise, and experience to evaluate the physical quality of structures while they are being built. Even yet, the client is more concerned with the evaluation of functional than technical parameters. According to (Ghaleb et.al., 2013) customer satisfaction has both direct and indirect effects on business-related outcomes.

Businesses work to keep consumers loyal by raising the caliber of their goods and services. As a result, a large number of national indices have been created to gauge customer satisfaction with a variety of businesses. Therefore, the customer satisfaction index (CSI) is used to gauge how well businesses and organizations meet the expectations of their clients on a nationwide scale. It is also possible to compare goods and services within an industry using the CSI model. To gauge both customer pleasure and the financial success of businesses and organizations, the majority of nations have established their own customer satisfaction indices.

According to Gaikwad Hemlata (2022) Customer satisfaction is one of the critical success factors for all companies. Improving quality and customer satisfaction has received extensive attention. Customers want all utility and service and quality. It should present a good appearance. Customers need a good climate and its effect; customers need their requirements. Customers also reflected on cost. Customer satisfaction has become one of the issues for construction companies in their efforts to improve quality in the competitive market place. It can be seen as either a goal or a measurement tool in the development of construction quality. It is also apparent that high customer satisfaction leads to the strengthening of the relationship between a customer and a company, and this deep sense of collaboration has been found to be profitable. Satisfaction studies cut across a wide range of disciplines in the management and social sciences as well as the built environment.

Generally speaking, satisfaction is a subjective evaluation of the performance of products or services in meeting the needs and expectations of users or customers. It compares the benefits or values users or customers derive to that expected when a product or service is consumed. In a nutshell, satisfaction is a measure of the difference between the actual and expected performance of products or services in meeting users' needs and expectations from the users' or consumers' perspective during or after a consumption experience. Buildings like any other products are designed and constructed with lots of expectations by clients, professionals, users and the community (Rajiv et al., 2015).

2.1.5.1 Importance of customer satisfaction in condominium development

The impact of customer satisfaction on the construction sector is complicated due to various exogenous driving variables, including innovation and the financial markets, which make it a crucial instrument for competition. Improving customer happiness has been highlighted as one of the most significant difficulties facing businesses, according to Karunasena & Ranatunga (2009). Increasingly, businesses are using customer satisfaction as a means of setting themselves apart

from rivals. Additionally, it is believed that the foundation of the house construction sector is that its happy clients feel that the project can be deemed successful in the long run if end users are satisfied.

Although the house building business has acknowledged that meeting customer expectations is crucial, it is still unclear how well the sector is doing in this regard. Ambitious and comprehensive housing programs are terminated due to a lack of understanding of the needs and perceptions of users, which leads to the construction of unsatisfactory and inefficient housing. Thus, increasing one's understanding of the variables associated with homebuyer satisfaction would be crucial to gaining and preserving a competitive advantage (Gebrewold, 2015).

2.1.7.1 Customer satisfaction measurement

Consumer satisfaction has long been recognized in marketing thought and practice as a central concept as well as an important goal of all business activities (Anderson et al., 1994). It is believed that consumer satisfaction is a good, if not the best, indicator for a firm’s future profits (Fornell, 1992).

The Customer Satisfaction Index (CSI) is a critical metric used to gauge the level of satisfaction a customer has with a company's products or services. It's a quantitative measure, often derived from survey data, that provides insights into the customer's overall contentment and loyalty.

According to the study made by Lepkova & Butkiene (2016) the American Customer Satisfaction Index (ACSI) model is a cause-and-effect model with indices for drivers of satisfaction on the left side (customer expectations, perceived quality, and perceived value), satisfaction (ACSI) in the center, and outcomes of satisfaction on the right side (customer complaints and customer loyalty). The indexes (shown in the diagram below) are multivariable components measured by several questions that are weighted within the model.

The questions assess customer evaluations of the determinants of each index. Indexes covers the assessment of 200 different companies on a 100-point scale from customer surveys. The survey and modeling methodology quantifies the strength of the effect of the index on the left to the one to which the arrow points on the right. These arrows represent "impacts." The ACSI model explains customer satisfaction (ACSI) on customer loyalty. Looking at the indexes and impacts, users can determine which drivers of satisfaction, if improved, would have the most effect on

customer loyalty. The ACSI model as indicated in Figure 2.1 consists of the factors affecting satisfaction (perceived value, customers' expectations, perceived quality) on the left, the Customer Satisfaction Index in the center and the consequences of satisfaction (customers' complaints, customer loyalty) on the right. The ACSI is an important indicator of USA companies, macroeconomics and customer behavior.

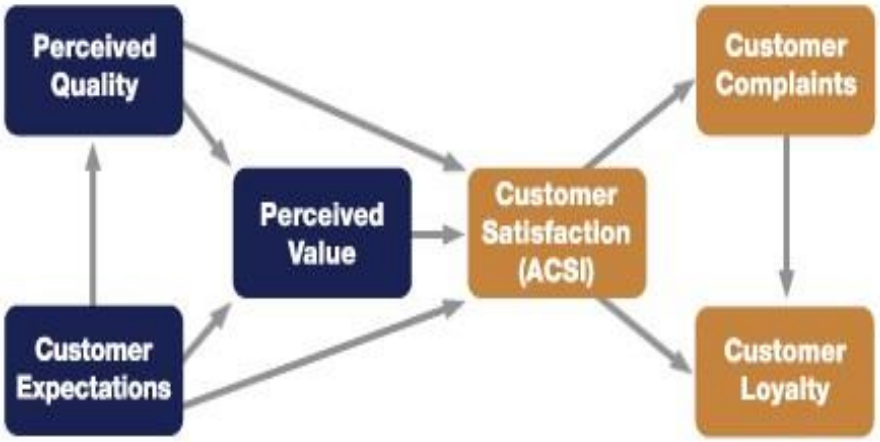

Figure 2.1: American customer satisfaction model

2.2

Empirical review

2.2.1 Resident satisfaction

Housing providers often assume that house seekers, especially in the developing countries, are usually desperately in need of housing. It becomes difficult to understand whose interest is being provided for by most policy decisions on housing planning and development program which do not entail a comprehensive assessment of a household within its residential condition (Olatubara, 1996).

Residential satisfaction is a measure of differences between households' current and preferred housing and neighborhood situations (Galster & Hesser, 1981). It is the emotional response to a person's dwelling; the positive or negative feeling that the residents have for where they reside (Francescato et.al., 1979). It is also a concept that can be influenced by both objective and subjective measures of housing attributes which includes physical, social, and psychological and management attributes and the demographic characteristics of the residents (Amole, 2009).

As Onibokun (1974) asserted that social, cultural and behavioral elements within the entire societal environment influenced the habitability of a house. Other factors include age, income, education, employment, and welfare, number of children and family size, social participation and interaction (Varady & preiser, 1998), marital status, past living condition as well as residential mobility and future intention to move (Jiboye, 2012).

According to previous studies of residential satisfaction are basically of two types; (1) residential satisfaction as a predictor of behavior (intention to stay/move from existing housing), (2) residential satisfaction as a criterion of housing quality (Weidemann & Anderson, 1985). Based on residential satisfaction as a predictor of behavior assume that satisfaction with existing housing determines behavior of the resident in terms of making changes to the housing unit or the decision to move to another housing unit. The assumption basis is differences in the existing housing and the actual housing needs and preferences of the dwellers will result in either making changes to existing housing or move to a housing unit that meets their actual housing needs and preferences.

The level of income earning of the housing consumer is strongly related to the satisfaction of the housing environment. The study of Adriaanse (2007) indicated that higher income households are generally satisfied with their housing. Existing literature suggests that housing satisfaction is a function of a whole series of factors related to the resident's house, services within the housing area, relationship with neighbors and the location of the housing unit. For example, Morris (1978) found that satisfaction depends on a whole system of beliefs and opinions that the resident entertains in respect to the housing unit and which are not connected with its physical characteristics. Galster (1987) measured housing well-being using a composite sum of satisfaction with housing unit features, for e.g., the number of rooms per family and the possession of a private bathroom and kitchen. On the other hand, Clarke (2008) identified housing types, property size, internal and outdoor space, kitchens and bathrooms, neighborhood parking and external appearance as factors important to today's households. Varady and Carrozza (2000) stress that housing satisfaction is related to satisfaction with housing unit, satisfaction with services provided, and satisfaction with the neighborhood and area, which also covers the location specific aspects.

Nor et.al (2011) advanced that previous research findings on residential satisfaction have provided a basis for measuring housing satisfaction which includes; Housing units satisfaction, Neighborhoods quality satisfaction, satisfaction with the facilities and amenities within the

building structure and its surroundings. Research findings indicate residential satisfaction with their residential environment have shown complex patterns of relationship. That is the relationship between rated satisfaction and individual, physical and social characteristics (Rioux and Werner, 2011). Socioeconomic backgrounds have different level of aspiration, tolerance and psychology on satisfaction towards housing (Galster, 1987).

An empirical study indicates that, demographic determinants of residential satisfaction to include age, education, family composition and life circle changes. Age is an influencing variable in the study of residential satisfaction as people of different age expresses different satisfaction level, Galster (1987) found that older resident has a lower level of aspirations but higher level of tolerance towards any short comings regarding the residence. Mohit et al. (2010). However, discover negative influence of age over satisfaction. The number of residents in a given unit can be an influencing factor of residential satisfaction. Single- and two-person's household might be expected to be more positive with their housing and the estate than the household with children (Dekker, 2007). Ethnic affiliation is equally a factor in shaping individual satisfaction level, as each tribe has their own genetically inclined housing norms which could influence their attitude over their residential settings. This is attested by the study of Husna and Nurizan (1987) on residents' satisfaction of low-income public housing and discovers differences in satisfaction level between Malaysia, Chinese and Indians. Educational status also contributes towards satisfaction with housing as better educated household tends to express low level of satisfaction compared to less educate.

In their studies of satisfaction with public core housing in Abeokuta, Nigeria, Ibem and Amole (2012) found that educational background, employment sector, age and sex have significant contribution towards residential satisfaction.

Structural attributes are a considered factor in the studies of residential satisfaction, which includes objective physical of housing such as kitchen space, laundry and washing areas, size of living area and dining area, number and level of sockets, number of bed rooms and bath rooms, and other aspect of housing (Teck-Hong, 2012). Building features such as number of bed rooms, size and location of kitchen are strongly related to residential satisfaction (Salleh, 2008). Karadag et al. (2012) as cited in (Ozgur, 2009; Koc, 2009) which observe thus, size of housing and the number of its rooms,; the efficiency of the housing usable spaces and their usefulness (plan); the physical

condition of the house and the building; the building being new, durable and well-kept; the efficiency of substructure (electricity, water, cable TV, telephone etc); the condition of light; the condition of insulation and heating; the availability of elevator in the multi storey buildings; environmental arrangements; accessibility; sufficient security; the comfort of house and buildings; its having environmental quality factors affect the satisfaction in a positive way. Ogu (2002) reveals that, most housing components generally indicates positive to residential satisfaction, while environmental variable received negative feedback.

In his studies of housing satisfaction in private low cost, Salleh (2008) examine two influencing factors of quality of life to includes satisfaction towards housing and the surroundings; and the findings reveals neighborhood factors as the most significant on housing satisfaction. The factors contributing to a low level of satisfaction were related to neighborhood facilities and surrounding areas; which are poor public transportation, lack of children's playground, multi-purpose hall, parking areas, safety and facilities for the disabled.

Ramdane and Abdullah, 2000, as cited in Salleh, et al. (2011) discovers three factors affecting satisfaction towards housing; housing units, neighborhood and community services factors. Neighborhood factors recorded high significance regarding housing satisfaction variables.

Baker (2002) as cited in Mohit et al. (2010) has observed that location characteristics are important considerations for understanding the formation of residential satisfaction among public housing tenants. In their studies on public housing provision and user satisfaction in three selected housing estate developed by Ondo State Property Development Corporation, South West Nigeria, Clement and Kayode (2012) discover that there was high rate of satisfaction with factors such as proximity to religious center and adequate size of the living room. Location attributes can be a source of satisfaction or dissatisfaction particularly in relation to specific activity of the residents. Favorable location attributes generally refer to accessibility in relation to central business district, local amenities such as shopping centers, schools and transportation centers (Tan, 2011). Housing development within a functional neighborhood location reasonably enough to provide the residents with access to their requirements is indeed satisfactory.

Lui (1999) discovers a high level of dissatisfaction with the public housing residents lie in the areas of maintenance and cleanliness of the building estate, integrity of the building fabric and

ease of access by public transport while the major concerns of the private housing residents lie in the lack of facilities for the disabled as well as for recreational, elderly and childcare facilities. The concept of residential satisfaction was developed based on the premise that the gap in between the actual desired housing by residents and the exact neighborhoods conditions is determined (Galster & Hesser, 1981; Mohit et al. 2010). Residential decisions by the house hold are being made based on their needs and aspirations. Absence of complains suggest residential satisfaction at equilibrium point of needs and aspirations, and would likely feel dissatisfied if their housing and neighborhood do not meet their needs and aspiration (Ghani Salleh, 2008).

Once their dissatisfaction with the current housing surpasses a certain level, they are likely to consider some form of housing adjustment (Salleh, 2008; Hui & Yu, 2009). This is particularly true when housing is acquired with the expectations that it meets the household specific and diverse needs (Ibem & Amole, 2012). However, the concept of residential satisfaction is generally linked with the quality of life as indicated in various satisfaction researches (Galster & Hesser, 1981; Galster, 1987; Ibem & Amole, 2012). In view of the foregoing two aspect of residential satisfaction should be considered for a meaningful research outcome, and these are subjective analysis based on certain bench mark as influenced by the house hold characteristics; and objective as determine by the overall housing components. Galster (1985) and Amole (2009) contend that, the subjective measure is associated with the psychological aspects of human beings and measures perception, emotions, attitude and aspirations.

The preceding review of existing literature and studies on residential satisfaction highlighted that physical characteristic of housing, the neighborhood environment and the public facilities provided determine the level of residential satisfaction, however, these may vary by the type of housing, the locale, the community, the cultural backgrounds as well as the nationality. This suggests that studies to determine the residential satisfaction of housing types is specific to the housing area, type of housing provided, community, housing policies and the country itself. As such, in order to assess the level of residential satisfaction with condominium housing in Addis Ababa, the criteria used should be specific to the city, but based on or adopted from the main definitions and concepts of residential satisfaction globally and on lesson learnt through existing studies in other countries. Due to the lack of adequate studies in Addis Ababa, this study aims to fill the existing gap and contribute towards the development and growth of the housing sector, through amending existing

housing policies, strategies and contributing to the development of future housing projects and policies.

2.3 Factors affecting customer satisfaction

Different works have different factors of customer satisfaction. Based on (AL-Haddad et al., 2020), indoor and outdoor factors are the cumulative factors that affect customer satisfaction. Price, location, aesthetic view, storage, water tank and guard conditions are among the outdoor customer satisfaction factors. While the sewage, the balcony, finishes, internal division, central ventilation, heating and humidity are among the indoor factors that affect customer satisfaction. According to (Rajiv et al., 2015), Builders Attributes, Type, Location and Aesthetic Appearance are the factors affecting customer satisfaction. Based on the ACSI model, perceived value, customers' expectations, and perceived quality are the factors that affect customer satisfaction. Customer satisfaction factors are classified in two basic groups according to (Karunasena & Ranatunga, 2009).

These are Design and Construction, and Maintenance and Operation. Under design and construction Customer base, Space utilization, building structure, Spatial movements-access, External building envelop, Adequacy of ventilation, Basic services arrangements, Safety and security, Quality of material and workmanship, social needs and surroundings, Legal provisions and Co-ordination with customers are sub components. While under maintenance and operation Basic services during Maintenance, Basic services during operation and Co-ordination with customers during operation are sub components.

A study made by Iveta and Sanda (2017) focuses on determining customer satisfaction in the real estate management sector in Riga. The aim of the article was to discover the essential elements necessary for ensuring customer satisfaction in real estate management companies. Data show that communication and the culture of work performance are highly rated. However, satisfaction with service prices and deadlines has received a lower rating.

The study concludes that satisfaction with service prices and deadlines has received lead to 80 % of customer complaints. Thus, the customer needs in the studied company were as follows: strict observance of deadlines and economically reasonable pricing for the provided services.

A study made by Lepkova et al. (2016) tries to analyze the housing market and to look into the satisfaction of people with living conditions in new apartment buildings.

From the study the total Customer Satisfaction Index (CSI) shows that the customer satisfaction with dwellings in new apartment buildings was average (63%). The technical and functional quality was average, because new housing designs of better quality offset those of lower quality with defects. The technical index (CSIT of 3.75 points) shows the satisfaction of needs to be at 75%, while the functional index (CSIF of 3.49 points) - at 69.6%. The index of the warranty services and the builders' prompt response to complaints (CSIG of 2.2 points) is the lowest, below that of average satisfaction (satisfaction of needs at 44%), thus customers can be said to be completely discontent.

In addition to this the study shows that considering the desire to change dwellings and readiness to recommend them to other customers, customer loyalty stands at 69.33%; customer loyalty was, hence, average.

In terms of the reasoning behind customer satisfaction of a real estate company, the most important aspect was the affordability of the units that were on offer, while the security services that were provided by the real estate organization in the real estate project were considered to be the least important factor (Mohindru et al., 2023).

As when realizing the importance of resident satisfaction, the impact of resident satisfaction on housing development programs has become a widely discussed topic (Matzler et al., 1996) and resident satisfaction is being highly prioritized (Johnson & Fornell, 1991). Yet, reports on abandoned housing projects, late delivery and poor quality are frequently highlighted. This may be attributed to several reasons such as unskilled construction workers, inexperienced site supervisors, substandard materials, disorganized and labor-intensive construction works, rushed construction job and huge demand for the properties (Elias, 2003).

Additionally, Ozaki (2002) reports that poor communication between buyers and developers prevent the flow of necessary information on services and products; and this leaves the residents dissatisfied. Weidemann et.al (1982) add that many social housing projects fail to meet house buyers' needs due to lack of knowledge about the physical aspects of housing quality and design criteria.

As envisaged by researchers, the concept of housing is a combination of the overall physical and social components that make up the housing system. Morris and winter (1978) explain housing

satisfaction as "a state of the level of pleasure with current housing conditions". From the perspective of the actual-aspiration gap approach, housing satisfaction can be a standard for evaluating the quality of the residential environment, by measuring the effect of perceptions and assessments of the objective environment (Weidemann & Anderson, 1985). Most individuals evaluate their homes not only by their actual conditions, but also according to their desires for the future (Varady & Preiser, 1998).

Building features are strongly related to housing satisfaction or dissatisfaction (Kaitilla, 1993). The number of bedrooms, privacy, and the location of the kitchen contribute to the level of dissatisfaction among residents of the core housing program (Ozo, 1990). Moreover, poor housing conditions are generated by problems posed by inadequacy of internal facilities (Ozo, 1986). This was verified by various studies related to housing quality condition and services (Varady & Preiser, 1998).

Neighborhood dissatisfaction occurs with regard to distances to school, to employment and medical centers and the geographical location of housing (Awotona, 1991). Also, accessibility of public transportation, community and shopping facilities and physical environment variables had been identified as predictors of neighborhood satisfaction (Ozo, 1990). Satisfaction with neighborhood has been noted as an important factor of housing satisfaction (Vrbka & Combs, 1991) to the extent that residents may ignore inadequacies in the housing when they are satisfied with the neighborhood.

To conclude, while product and service quality are the main factors that contribute to customer satisfaction in the housing market, residential environments and neighborhoods are sometimes not perfect and may influence customer dissatisfaction. As such, it is extremely difficult to predict customer satisfaction as product and service quality alone may not always guarantee it.

2.4 Research gap

The research gap identified in this study on level of satisfaction on condominium house owner, highlights areas where existing literature has limited or where further investigation is needed. The research gap in this study includes:

- **Limited Focus on condominium house floor area measurement:**

Existing literature have primarily focused on general aspects of condominium housings, such as cost, schedule, and quality, without specifically examining the impact of how the owner of the condominium is satisfied by the area of their house. Due to this there will be a lack of in-depth studies that specifically address the role of floor area on resident satisfaction in this specific setting.

- **Lack of Localized Studies:**

There is a scarcity of research that specifically investigates the satisfaction of condominium house user. Previous studies have not adequately addressed the key factors of satisfaction, practices of lifting user satisfaction, and floor area measurement effect on user satisfaction in this geographical area, leading to a gap in localized knowledge and insights.

- **Inadequate Understanding of user satisfaction:**

Existing local literature have provided limited insights into the specific customer satisfaction on condominium user. There is a lack of detailed examination of how condominium house manifest, propagate, and impact condominium housing user satisfaction in the study area.

- **Absence of Comprehensive Frameworks:**

Previous studies lack comprehensive theoretical frameworks or models that specifically address the relationship between condominium users and their satisfaction. The research gap will stem from the need for structured frameworks that integrate various factors influencing condominium house users and their satisfaction level.

By addressing these research gaps, study aims to contribute to filling the existing knowledge voids in the field of condominium housing. Therefore, in order to achieve this, the aim of this research was to solve the research gap in the factors affecting customer satisfaction to the dwellers (residents) in selected condominium housing site (Arabsa sit 6).

The conceptual framework of study on the condominium housing user satisfaction on the house they occupy in Arabsa site 6 was based on the relationships between independent variables and the dependent variable. The independent variables represent factors that influence or contribute to the condominium house user satisfaction, while the dependent variable is the outcome or result that is impacted by these factors. Independent Variables:

2.5 Conceptual frame work

- **Area provided to condominium users:** This variable represents the influence of area provided to the condominium house owners. It includes factors such as common area provided on the building, area provided to parking, green area area provided to walk way, area provided to play ground, total carpet area difference between what contracted to the residence and actual on site.
- **Physical characteristics of the building:** This variable focus on how the physical characteristics of the building affects the level of condominium house user. It includes factors such interior design of the house, the room height, building designed, building orientation, number of electrical sockets installed in the house and number of light points installed in the house.
- **Physical unit of the building:** This variable examines the contribution of different physical unites available on the building the satisfaction of the resident. This includes the electrical duct of the building, the sanitary duct of the building, the stair case of the building, the water tanker, and the water pump.
- **Cost related factor:** This variable assesses the role and impact of cost on user satisfaction. Some cost related factor used on this research was: affordability, value of the house in the future, finishing cost, and initial cost of perchasing the house.
- **Quality related factor:** This variable assesses the role and impact quality of the house on user satisfaction. This includes quality of design, finishing material quality and quality of the condominium in terms of environmental compliance.

Dependent Variable:

- **Condominium user satisfaction**: The dependent variable in the study is the overall condominium user satisfaction in Arabsa site 6. condominium user satisfaction is a comprehensive measure of project success, encompassing factors such as cost efficiency, quality of workmanship, stakeholder satisfaction, and compliance with project requirements.

By analyzing the relationships between these independent variables (Area provided to condominium users, Physical characteristics of the building, Physical unit of the building, Cost related factor and Quality related factor) and the dependent variable (condominium user

satisfaction), the study aims to assess the level of condominium users' satisfaction by the house the occupy. The conceptual framework provides a structured approach to understanding the key factors influencing condominium satisfaction and offers insights for improving satisfaction level.

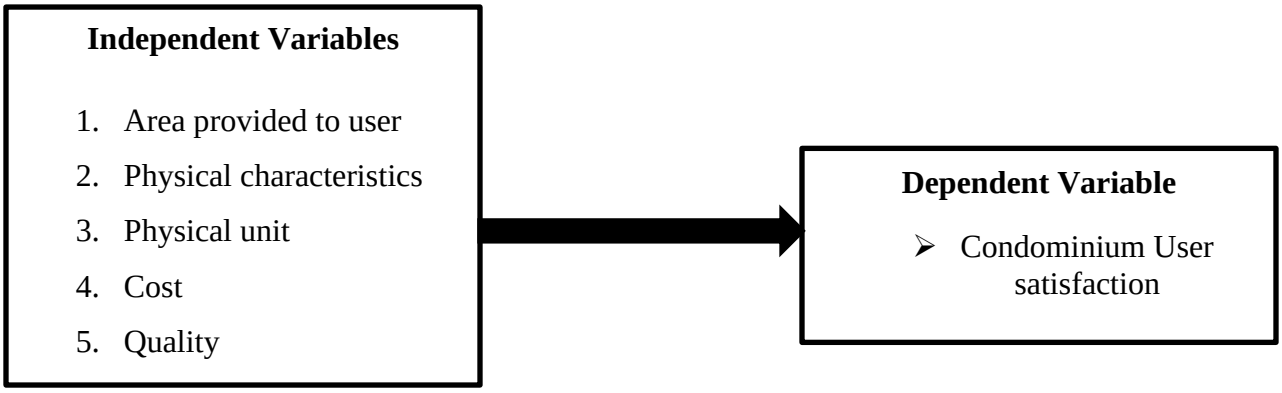

Figure 2.2: Conceptual frame wok of the research

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter briefly describes the methodology which was used in the research. It incorporates the research design and approach, target population, sampling technique and sample size, the data sources, methods of data collection, and methods of data analysis.

3.1 Study Area

The study area for this study was the condominium houses in Arabsa site 6. The site encompasses 7,802 residents. Table 3.1 shows the total sample distribution on Arabsa site 6. But from the above population there are similar house types that are redundant to the population. Hence in order not to duplicate the sample additional sorting of the population is required.

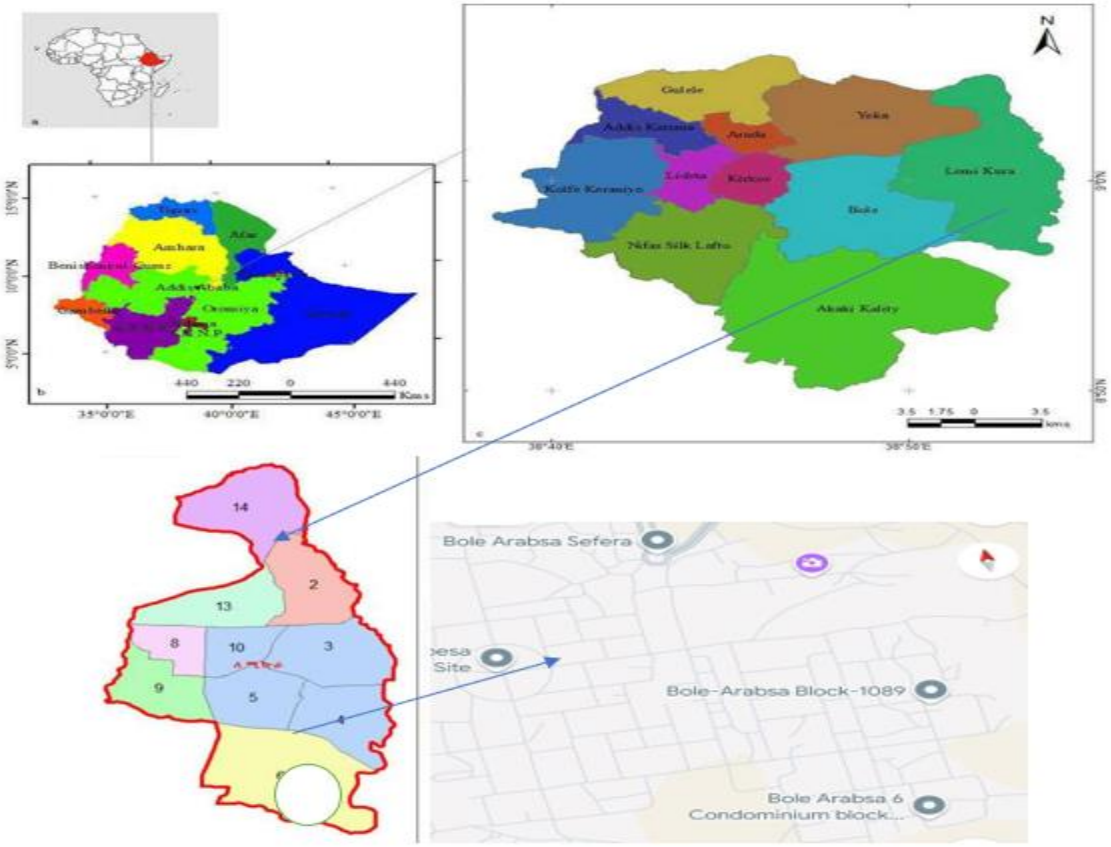

Figure 3.1: Conceptual frame wok of the research

Source: Satellite GPS 2023 version

3.2. Research design and approach

In this research descriptive research design was used. Descriptive research design accurately and systematically describes the population. The descriptive research design was more appropriate for this study for the reason that it helped to show the existing reality and level of customer's satisfaction of the population of the study area. In doing so, quantitative data have been used to investigate the quality of service and to identify the level of customer satisfaction through net floor area transferred and the factors that affect customer satisfaction for Arabsa site 6 Condominium residents.

Both quantitative and qualitative research methods have been used to compute and analyze data collected from the residents using survey questionnaires and desk study respectively in reference with the actual site data measure of Arabsa condominium and responsible bodies concerning the issue.

3.3 Source of data

In this research, both primary and secondary data was used. According to Cooper and Schindler (2008) primary data refers to data that will be collected at the first time specifically for the purpose of research project whereas secondary data refers to data that will be collected by someone other than the user. The researcher in the current study has gathered the primary data from the selected respondents and the secondary data from the condominium house user contract document in order to fully meet the objectives of the study. Therefore, this study has used both primary and secondary data to obtain the necessary information about the research.

3.4 Types of data

The research used both qualitative and quantitative data. Quantitative and qualitative methods are the engine behind evidence-based outcomes. In most pieces of research, these approaches are considered to be two functional and necessary methods (International Journal of Research, February 2021)

3.5. Sample design

3.5.1. Population of the study.

From the total condominium sites which are delivered to beneficiaries, the Arabsa site was selected since new residents are obtaining their house and their location proximity to the

researcher. The number of the population was too large. However, a properly selected and limited number of populations have been used for investigating this research. The population of the study was grouped according to the nature and type of the population. The grouping was classified based on the number of bedrooms the house contains. These are: studio, one bedroom, two bedroom, and three bed room. The population of the research is shown in table below.

Table 3.1: Population of the study

No.	Classification	Number
1	Studio owners	176
2	One bed room owners	360
3	Two bed room owners	375
4	Three bed room owners	20
	Total	931

Source, Addis Ababa housing projects corporation (2024)

3.5.2. Sample size of the study

In order to make the study fair and representative of the whole study site, the samples were taken from each type of block (building typologies), each floor and type houses (Studio, one bedroom, two bedrooms and three bed rooms).

$$n = \frac{N}{1+\mathrm{N(e)2}} \text{.....1}$$

Sample size for studio

$$n = \frac{176}{1+931(0.05)2} = 53$$

Sample size for one bed room

$$n = \frac{360}{1+931(0.05)2} = 109$$

Sample size for two bed room

$$n = \frac{375}{1+931(0.05)2} = 112$$

Sample size for three bed room

$n = \frac{20}{1+931(0.05)2}$ = 6

Based on the calculation the population and sample size are indicated in Table 3.3 bellow.

Table 3.2: Summary of sample sizes calculated from population

No.	Category	Population	Sample size
1	Studio owners	176	53
2	One bed room owners	360	109
3	Two bed room owners	375	112
4	Three bed room owners	20	6
	Total	931	280

Source, own calculated (2024) using the data from Addis Ababa Housing Projects

3.5.3 Sampling technique

The type of sampling technique used in this research was a stratified random sampling. Stratified random sampling is a method in which the researcher divides the population into smaller groups that don't overlap but represent the entire population. While sampling, these groups can be organized, and then draw a sample from each group separately. Here the strata for the sampling technique employed are studio owners, one bed room owners, two bed room owners and three bed room owners. In order to select sample size from the strata of the population Taro Yamane's formula was used. According to the statement shown in the study of (Nanjundeswaraswamy & Divakar, 2021) Yamane's formula has been employed for small and finite population size. Yamane's formula is shown in Equation 3.1.

$$n = \frac{N}{1+\mathrm{N(e)2}} \quad \text{.....3.1}$$

Where n = sample size, N = Population size, e= the desired level of precision.

The sample size to be calculated for the confidence level of 95% using the formula: confidence level of 95% means that e =1-0.95=0.05.

3.6. Method of data collection

3.6.1 Data collection tools

There are several instruments of collecting primary data, particularly in surveys. Important ones are: observation method, interview method, through questionnaires among which a researcher is supposed to select to achieve the objectives of the research. Selection of data collection method depends on different factors such as nature and scope of enquiry, availability of fund, time needed and precision required. The type of research and data needed dictate what type of data collection methods to be used. The methods to be used to collect the data for this research was questionnaire Survey document analysis. The questionnaires were prepared in accordance with the objectives of the research. Documents were written and printed materials that official researches focus on variation in construction projects and accordance with the research objective. The information was gathered from public building construction project site cooperative workers including, site engineers, office engineers and Project manager at the project during this project progress.

3.6.2. Observation

Observations provided real-time, context-rich data that were necessary for addressing the research questions (Creswell & Creswell, 2018). This researcher made informants aware of the focus of the study and arranged a time that they thought would be optimal to observe condominium user satisfaction. Therefore, direct observation was a valuable source of data. Once triangulated adequately with data from other sources, observational fieldnotes proved to be valuable validation of insights (Ravitch & Carl, 2016).

3.6.3 Questionnaire

As stated by Creswell (2008) a questionnaire is the most widely used method in survey strategy. Survey provides an effective way to collect responses from a large sample before making analysis. To obtain the needed data, a structured questionnaire has been used as a data collection tool, due to the sample size and the quantitative approach of the study. The questionnaire was open ended question and distributed among these professionals. The answer for the structured questionnaire was rated based on Likert ‘s-scale of five ordinal measures of agreement on each contributing factor (from 1-5) to identify potential causes the ratings used were: strongly disagree = 1; disagree = 2; Neutral = 3; Agree = 4; and strongly agree = 5. The Likert scale responses provided by participants are analyzed to gauge their agreement or disagreement with statements related to

design errors and project variations. Responses on the Likert scale (e.g., strongly disagree, disagree, neutral, agree, strongly agree) was assigned numerical values and has been analyzed using statistical methods to identify trends or patterns in participant perceptions.

3.7. Method of data analysis

The analysis of data represents the application of deductive and inductive logic to the research process the data often classified by division into sub groups and were then analyzed and synthesized in such a way to give answer for the basic question (Creswell & Creswell, 2018). Analysis of data is the most skilled task of all stages of the research, it is a task which needs researcher own judgment and skill. Statistical package for social science (SPSS) software Version 27 has been used to analyze the data and descriptive (mean & standard deviation) and inferential statistical analysis (correlation and regression analysis) has been applied. Additionally, Microsoft excel was used to analyze data.

3.7.1 Descriptive Analysis

Descriptive analysis is used to summarize and describe the characteristics of the study sample, including demographic information and key variables related to design errors and project variations. Descriptive statistics such as frequencies, percentages, means, and standard deviations has been calculated to provide an overview of the data and identify patterns or trends within the sample.

3.7.2 Inferential Analysis

Inferential analysis has been employed to test hypotheses, examine relationships between variables, and draw conclusions about the population based on the sample data. Pearson Correlation Analysis statistical method has been used to assess the strength and direction of relationships between variables, such as the relationship between design errors and project variations. Multiple Regression Analysis statistical method has been conducted to determine the extent to which independent variables.

3.8 Method of presentation

Data presentation is the process of visually representing data sets to convey information effectively to an audience. In an era where the amount of data generated is vast, visually presenting data using methods such as diagrams, graphs, and charts has become crucial. Text, tables, and graphs for data

and information presentation are very powerful communication tools. Text, tables, and graphs for data and information presentation are very powerful communication tools They can make an article easy to understand, attract and sustain the interest of readers, and efficiently present large amounts of complex information (In & Lee, 2017)

In this research, three most common data presented methods was used. Thise are:

- **Text presentation:** Text was the main method of conveying information as it was used to explain results and trends, and provide contextual information. Text was used to provide interpretation or emphasize analyzed data.
- **Table presentation:** Tables, which convey information that has been converted into words or numbers in rows and columns, have been used for nearly 2,000 years (In & Lee, 2017). Anyone with a sufficient level of literacy can easily understand the information presented in a table. In this research, tables were the most appropriate for presenting analyzed results of quantitative data. This was because, tables have strength of accurately present information that cannot be presented with a graph, information with different units can be presented together and were useful for summarizing and comparing quantitative information of different variables.
- **Graph presentation:** Graphs were used for data presentation is because, it was effective for presenting large amounts of data. A graph format that best presents information must be chosen so that readers and reviewers can easily understand the information. In the following, we describe frequently used graph formats and the types of data that are appropriately presented with each format with examples. In this research, a bar graph and histogram were used since a bar graph is used to indicate and compare values in a discrete category or group, and the frequency.

3.9 Reliability and Validity

3.9.1 Reliability

The Reliability of the questionaries' prepared was assessed using a statistical package for social sciences (SPSS) version 27. A reliability test is conducted to check whether each item in the scale is free from error of measurement (Creswell & Creswell, 2018). If a questionnaire is examined at different times and across different populations, and it produces the same results, the questionnaire is "reliable". According to Cronbach (1951) test Cronbach's alpha values range from 0 (un-reliable)

to (reliable) with 0.7 being considered a relatively strong value of reliability. It is widely recognized that the most common measurement of reliability is the Cronbach ‘s alpha, which should be greater than 0.7 as cutoff point (Hair et al., 2010). In this study, Cronbach ‘s alpha reliability test was conducted to validate the reliability of the measurement scale separately as well as the overall measurement scale.

3.9.2 Validity

The validity, in essence, refers to the appropriateness of the measures used, the accuracy of the analysis of the results and generalizability of the findings. To provide supporting evidence that the researcher measure what it intends to measure, a test for content validity was conducted by a pilot study. To check the content validity 15 questionnaires was prepared and distributed to experienced professionals in construction projects. After that, the questionnaires were modified based on the received comments and distributed to the targeted populations.

Table 3.3: Reliability test

Case Processing Summary			
		N	%
Cases	Valid	261	100.0
	Excluded[a]	0	.0
	Total	261	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.980	41

Source, own survey generated from SPSS (2024)

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents finding of survey data analyzed and interpreted in line with the study objectives. The finding of the data gathered are presented based on the research methodology designed. For this purpose, statistical instruments called descriptive statistics such as: mean, mode, median, and standard deviation, rank by using tables, figures and additional explanations are used to perform data analysis. Additionally inferential data analysis is also applied to the research. The data is collected from residence of arabsa site 6. This part of the study deal with presenting, analyzing and interpreting the data gathered from questionnaires and desk study. The analysis consists of descriptive and inferential analysis.

4.1. Demographic profile and response rate of the respondent

4.1.1 Response rate of the respondent

The table shows the number of participants, questionnaires distributed, questionnaires returned, and valid questionnaires for each type of apartment. The overall return rate is 93%. The return rate for studio apartments is 91%, the return rate for one-bedroom apartments is 95%, the return rate for two-bedroom apartments is 92%, and the return rate for three-bedroom apartments is 100%.

Table 4.1: Valid questionnaire response rate

No.	Target respondent	Distributed Questionnaire	Returned Questionnaire	Questionnaire Valid	Percentage
1	Studio	53	51	48	91%
2	One bed room	109	106	104	95%
3	Two bed room	112	104	103	92%
4	Three bed room	6	6	6	100%
5	Total	280	267	261	93%

Source, own survey data (2024)

4.1.2 Demographic profile of the respondent

In this section the general profile of the respondents was analyzed using frequency and percentage. The demographic information used in this research were Gender and educational background.

Table 4.2: Respondents Gender

Valid		Frequency	Persent
	Male	145	55.6%
	Female	116	44.4%
	Total	261	100

Source, own survey (2024)

Table 4.3: Respondents Level of education

Valid		Frequency	Present
	Diploma	84	32.19%
	Degree	126	48.28%
	Masters and above	28	10.73%
	Other	23	8.8%
	Total	261	100%

Source, own survey (2024)

4.2. The existing level of condominium house owners' satisfaction.

In this section the descriptive analysis for each independent variable was presented and interpreted in reference to the specific objective

Table 4.4: Descriptive statistics for floor area related factor.

Descriptive Statistics			
Floor area related factor	N	Mean	Std. Deviation
The total area of the house transferred to the residence is not the same as it is indicated in the contract agreement.	261	3.4521	.90437
The common area provided on the building is satisfactory.	261	3.6552	.91770
The area provided to parking in the parcel is satisfactory.	261	3.7241	1.03800
The area provided to green area in the parcel is satisfactory.	261	3.7088	.99203
The area provided to walk way in the parcel is satisfactory.	261	3.6475	.94781
The area provided to play ground in the parcel is satisfactory.	261	3.5900	.94286
The total carpet area difference between what contracted to the residence and actual on site is negligible and can be considered as human error.	261	3.4981	.95121
There is significant difference between the total carpet area that contracted to the residence and actual area (transferred) of the house.	261	3.6973	.94683

Table 4.5: Descriptive statistics for physical characteristics related factor

Descriptive Statistics			
Physical characteristics related factor	N	Mean	Std. Deviation
The interior design of the house is attractive.	261	3.4713	.90519
The room height of the building is not satisfactory.	261	3.4521	.90437
The building is not designed in considering neighborhood relations.	261	3.6552	.91770
The building orientation is well designed in response to wind.	261	3.7241	1.03800
The building orientation is well designed in response to sun light	261	3.7088	.99203
Number of electrical sockets installed in the house is sufficient.	261	3.6475	.94781
Number of light points installed in the house is sufficient.	261	3.5900	.94286
The building is designed in considering for all variety of people like disable and elders.	261	3.4981	.95121

Source, own survey generated from SPSS (2024)

Table 4.6: Descriptive statistics for physical unit related factor.

Descriptive Statistics			
Physical unit related factor	N	Mean	Std. Deviation
The electrical duct of the building is not properly installed.	261	3.6973	.94683
The electrical duct installation is designed to be comfortable for maintenance.	261	3.6552	.91770
The sanitary duct of the building is properly installed	261	3.7241	1.03800
The sanitary duct installation is designed to be Uncomfortable for maintenance.	261	3.7088	.99203
The main stair case of the building is properly located	261	3.6475	.94781

The stair case of the building provides proper ventilation.	261	3.5900	.94286
The stair case of the building is exposed to enough light.	261	3.4981	.95121
Fire escape stair is adequately provided in the building.	261	3.6973	.94683
The water tanker installed on the building doesn't provide sufficient service to the residents.	261	3.6973	.96294
The water pump installed on the building doesn't provides sufficient service to the residents.	261	3.5556	1.00851

Source, own survey generated from SPSS (2024)

Table 4.7: Descriptive statistics for cost related factor

Descriptive Statistics			
Cost related factor	N	Mean	Std. Deviation
The house is affordable in cost for the residence.	261	3.5402	.86119
The house is cheaper relative to the market.	261	3.4176	.95973
The house fulfills low-cost housing project delivery.	261	3.5709	.97258
The value of the house is attractive when it is considered as an asset to the future.	261	3.5479	.93367
The house is not well finished so that it does incur additional cost.	261	3.5134	1.07632

Source, own survey generated from SPSS (2024)

Table 4.8: Descriptive statistics for quality related factor

Descriptive Statistics			
Quality related factor	N	Mean	Std. Dev
How do you rate the quality of the condominium in terms of design?	261	3.4751	.93867
The building finishing material is low quality	261	3.5556	1.00851
How do you rate the quality of the building in terms of access to public servant institutions (hospital, school police)	261	3.3410	1.07176
How do you rate the quality of the condominium in terms of environmental compliance?	261	3.5862	.97529
The building construction quality is not convenient.	261	3.3985	1.01633

Source, own survey generated from SPSS (2024)

Table 4.9: Descriptive statistics for customer satisfaction

Descriptive Statistics			
Customer satisfaction (dependent variable)	N	Mean	Std. Dev
How do you rate your satisfaction level related to net floor area of your house, common area provided in the building and common area provided in the parcel?	261	3.4904	.87974
How do you rate your satisfaction level related physical characteristics of your hose like interior design, room height, building orientation, installations, and its suitability to living?	261	3.3563	1.03378
How do you rate your satisfaction level related physical unites available on the building like staircase, duct water pump and tanker	261	3.5249	.89246
What is your satisfaction level on condominium hose in relation to initial cost, life time cost, the value it has to the future	261	3.4061	1.00183
What is your satisfaction level on condominium hose construction, method of construction, building integrity as a customer	261	3.5862	.97529

Source, own survey generated from SPSS (2024)

4.3. The extent and effect of resident house area and common area provided in the parcel on condominium house owners 'satisfaction.

In this section, floor area data collected from the house owner was analyzed and the results have been presented by dividing into sections. The house owner contracted floor area was collected from each residence and the actual floor area was measured on the site. The was made before the distribution of questionnaires to respondents.

Condominiums are a popular choice for people who want to live in a city or other urban area. They offer the convenience of living in a close-knit community with access to amenities, while still having their own private space. The data stated on Table 4.2 shows that the most common type of house in the strata is a two-bedroom house, with 375 houses or 40.28% of the total. The least common type of house is a three-bedroom house, with 20 houses or 2.15% of the total. The sample size for each type of house is proportional to the population size in the strata. For example, the sample size for two-bedroom houses owner is 112, which is 40% of the total sample size of 280.

Table 4.10: Different house owner data

House type	Total number of people/ house owner	Number of House owner with different typology	Description
Studio owner	1445	176.00	Out of 1445 houses owner 176 houses owner occupies different typology
One bed room owner	3158	360.00	Out of 3158 houses owner 360 houses owner occupies different typology
Two be room owner	3047	375.00	Out of 3047 houses owner 375 houses owner occupies different typology
Three bed room owner	152	20.00	Out of 152 houses owner 20 houses owner occupies different typology
Total	7802	931	Out of 7802 houses owner only 931 houses owner occupies different typology

Source, Addis Ababa housing projects Corporation (2024)

According to own survey data (2024), there are 1445 studio, 3158 one bed room, 3047 two bed room and 152 three bed room houses. However, as it was identified from the dusk study, there were identical houses in each class. Accordingly, for further investigation and sample size determination identical houses was identified. Therefore, there were different 176 studio, 360 one bed room, 375 two bed room and 20 three bed room houses.

4.3.1 Area difference effect on studio houses owner satisfaction

Studio house is a one-unit class condominium with separate toilet. In Arabsa site 6 there are 1445 studio houses. The actual floor area of the studio ranges from 29.28-36.65m^2. While the transferred floor area of the studio on the selected site ranges from 32.41-35.04m^2. From the survey data it is found that there are houses less than the contract area and some houses are greater in the area with the residence contracted to the bank. The maximum negative area found from the data is 5.1m^2 and the maximum positive area difference found from the data is 3.54m^2. To present the existing survey data let us see the top five differences from the sample.

Table 4.11: The last five maximum area difference from studio

Hose type	Transferred (contracted) area to the residence	Actual area of house	Area difference
Studio	34.38	29.28	-5.1
Studio	35.04	30.21	-4.83
Studio	34.82	31.36	-3.46
Studio	32.41	29.36	-3.05
Studio	35.04	32.01	-3.03
Studio	34.28	36.32	2.04
Studio	33.28	35.69	2.41
Studio	33.28	36.15	2.87
Studio	33.36	36.65	3.29
Studio	32.71	36.25	3.54

Source: own computation (2024)

From the above table it must be understood that:

1. Positive area difference: - In this it is observed that, the residence does not pay the expected contract cost, hence they took extra floor area beyond what they contracted to the developer.
2. Negative area difference: In this it is observed that, the residence took a house which is lesser than the actual house floor area.

It is observed that 49% of the sample studio house has an area difference greater than $1m^2$. The area summary is presented in the graph below.

As the work done by (Madsen et al., 2022) a minimum toilet's floor area starts from 1m2. Therefore, a reduction of 1m2 from floor area causes complain on residents. Depending on the work done by (Lepkova & Butkiene, 2016) a unit area is worthy and important for residents.

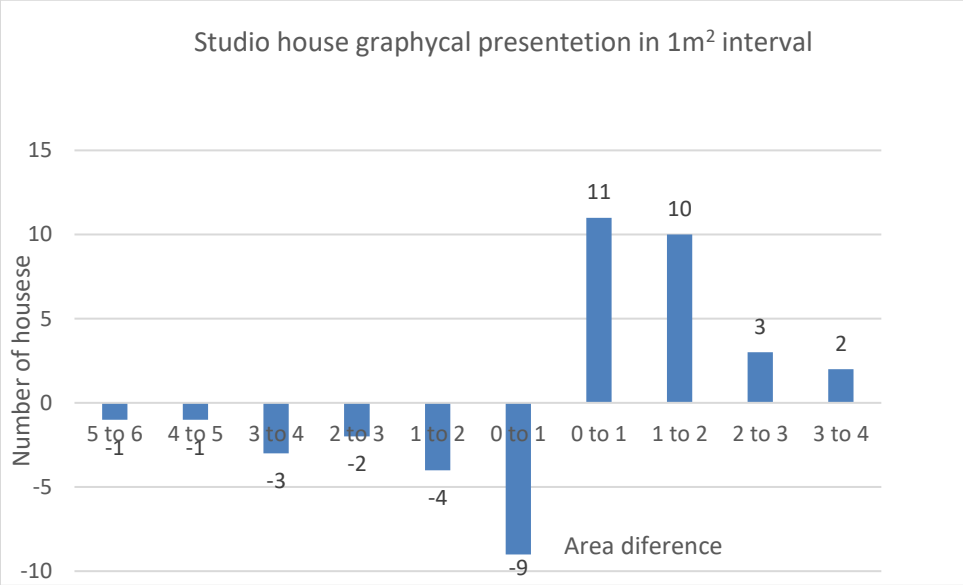

Figure 4.1: Studio house area difference distribution

Source, own computation (2024)

4.3.2 Area difference effect on one bed room houses owner satisfaction

A one-bedroom condominium is a type of housing unit that typically consists of a living room, kitchen, bathroom, and one bedroom. It is a smaller and more affordable option than a traditional house, and it is often located in urban areas. The actual floor area of one bed room ranges from

48.66-69.36m^2. While the transferred floor area of one bed room on the selected site ranges from 51.01-67.34m^2. From this the maximum negative area difference is 3.92m^2 and the maximum positive area is 5.36m^2. To present the existed survey data let us see the top five difference from the sample.

Table 4.12: The last five maximum area difference for one bed room

Hose type	Transferred (contracted) area to the residence	Actual area of house	Area difference
One bed room	65.15	61.23	-3.92
One bed room	62.96	60.25	-2.71
One bed room	63.46	61.02	-2.44
One bed room	51.07	48.66	-2.41
One bed room	63.87	61.48	-2.39
One bed room	65.05	68.39	3.34
One bed room	63.46	67.02	3.56
One bed room	65.21	68.96	3.75
One bed room	64.09	69.36	5.27
One bed room	63	68.36	5.36

Source: own computation (2024)

From the above table it must be understood that:

1. Positive area difference: - In this it is observed that, the residence does not pay the expected contract cost, hence they took extra floor area beyond what they contracted to the developer.
2. Negative area difference: In this it is observed that, the residence took a house which is lesser than the actual house floor area.

The data showed that 54% of the sample one bed room house has area difference greater than 1m^2. The area summary is presented in graph below.

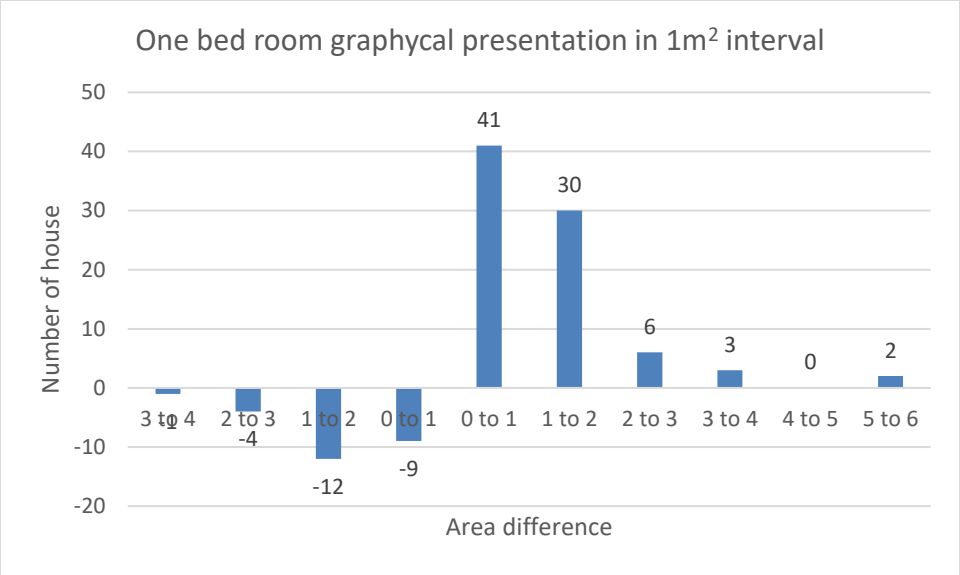

Figure 4.2: One bed room house area difference distribution

Source, own computation (2024)

From the survey data 17% of the sample population one bed room house occupies actual floor area lesser than what they contracted to the bank in more than $1m^2$ area difference. One the other hand 38 % of the sample population one bed room house occupies actual floor area greater than what they contracted to the bank in more than $1m^2$ area difference.

4.3.3 Area difference effect on two bed room houses owner satisfaction

A two-bedroom house in a condominium is a type of housing unit that typically has two bedrooms, one bathroom, a kitchen, and a living room. It is usually located in a larger building with multiple units, and residents share common areas such as the lobby, pool, and gym. The actual floor area of two bed room ranges from 63.26-91.03m^2. While the transferred floor area of two bed room on the selected site ranges from 70.47-89.82m^2.

From this the maximum negative area difference is 10.8m^2 and the maximum positive area is 4.48m^2. To present the existed survey data let us see the top five difference from the sample.

Table 4.13: The last five maximum area difference for two bed room

Hose type	Transferred (contracted) area to the residence	Actual area of house	Area difference
Two bed room	89.36	78.56	-10.8
Two bed room	88.51	78.34	-10.17
Two bed room	89.26	80.36	-8.9
Two bed room	88.51	79.89	-8.62
Two bed room	71.74	63.26	-8.48
Two bed room	71.67	74.89	3.22
Two bed room	71.74	75.31	3.57
Two bed room	71.53	75.16	3.63
Two bed room	71.53	75.36	3.83
Two bed room	70.88	75.36	4.48

Source: own computation (2024)

From the above table it must be understood that:

1. Positive area difference: - In this it is observed that, the residence does not pay the expected contract cost, hence they took extra floor area beyond what they contracted to the developer.
2. Negative area difference: In this it is observed that, the residence took a house which is lesser than the actual house floor area.

The data analysis result shows that 73% of the sample two bed room house has area difference greater than $1m^2$. The area summary is presented in graph below.

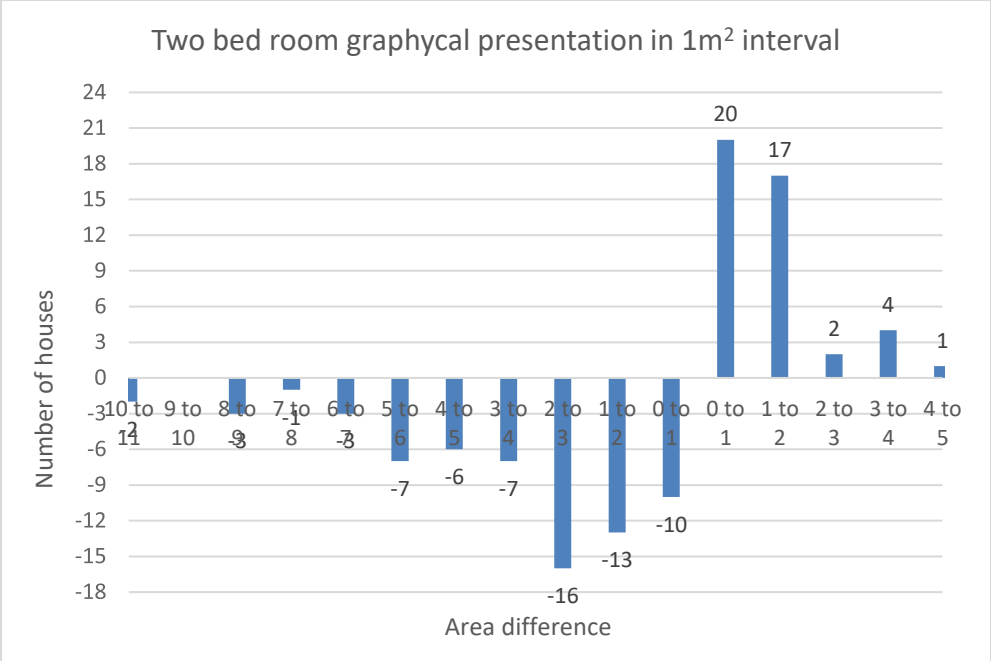

Figure 4.3: Two bed room house area difference distribution

Source, own computation (2024)

From the survey data 51% of the sample population one bed room house occupies actual floor area lesser than what they contracted to the bank in more than $1m^2$ area difference. One the other hand 22% of the sample population one bed room house occupies actual floor area greater than what they contracted to the bank in more than $1m^2$ area difference

4.3.4 Area difference effect on three bed room houses owner satisfaction

A three-bedroom house in a condominium is a type of housing unit that typically has three bedrooms, one bathroom, a kitchen, and a living room. It is usually located in a larger building with multiple units, and residents share common areas such as the lobby, pool, and gym. The actual floor area of three bed room ranges from 113.02-115.36m^2. While the transferred floor area of two bed room on the selected site ranges from 108.02-111.79m^2. From this the maximum negative area difference is 2.66m^2 and the maximum positive area is 3.57m^2.

The output of data analysis showed that 100% of the sample three bed room house has area difference greater than $1m^2$.

4.4 Key factors that affect the satisfaction of condominium house owners.

In this section key factors that affect the satisfaction of condominium house owner satisfaction was evaluated using the result of inferential analysis and open-ended questions.

4.4.1 Inferential analysis result

Inferential analysis is a type of statistical analysis that uses data from a sample to make inferences about a population. There are a number of different methods of inferential analysis. Some of the most common methods include: 1) Hypothesis testing: This is a method of testing whether a hypothesis is true or false. 2) Regression analysis: This is a method of estimating the relationship between two or more variables.

4.4.1.1 Assumption Tests to inferential analysis

Assumption tests are a type of statistical test that is used to determine whether or not the data support a particular assumption. Assumption tests are important because they can help to identify potential problems with the data, such as outliers or influential data points. This can help to ensure that the results of the analysis are accurate and reliable.

There are a number of different types of assumption tests, each of which is used to test a different type of assumption. Some common types of assumption tests include: 1) Normality tests: These tests are used to determine whether or not the data are normally distributed. 2) Homoscedasticity tests: These tests are used to determine whether or not the variance of the data is constant across the different groups. 3) Linearity and 4) homoscedasticity assumption tests.

Assumption tests are an important part of data analysis, and they should be used whenever possible to ensure the accuracy and reliability of the results. These four assumption tests have been tested as indicated in bellows section.

- **Linearity assumption test**

Standard multiple regression can only accurately estimate the relationship between dependent and independent variables if the relationships are linear in nature.

If the relationship between independent variables and the dependent variable is not linear, the results of the regression analysis will under-estimate the true relationship (Chemir, 2018). In order to test this assumption in this research, scatterplots were used. The Figure shows that independent

variables in the regression have a straight-line pattern with the dependent variable representing a linear relationship. In conclusion, the normally distributed plot portrays the Linearity assumption is fulfilled.

Based on the work done by Samson et al. (2015), The first assumption of multiple regression is that the relationship between the independent and the dependent can be characterized by a straight line. Standard multiple regression can only accurately estimate the relationship between dependent and independent variables if the relationships are linear in nature. A relationship is linear if one variable increases by approximately the same rate as the other variables changes by one unit. This means that the points on the scatterplot closely resemble a straight line. If the relationship between independent variables and the dependent variable is not linear, the results of the regression analysis will under-estimate the true relationship as shown in Figure 4.1.

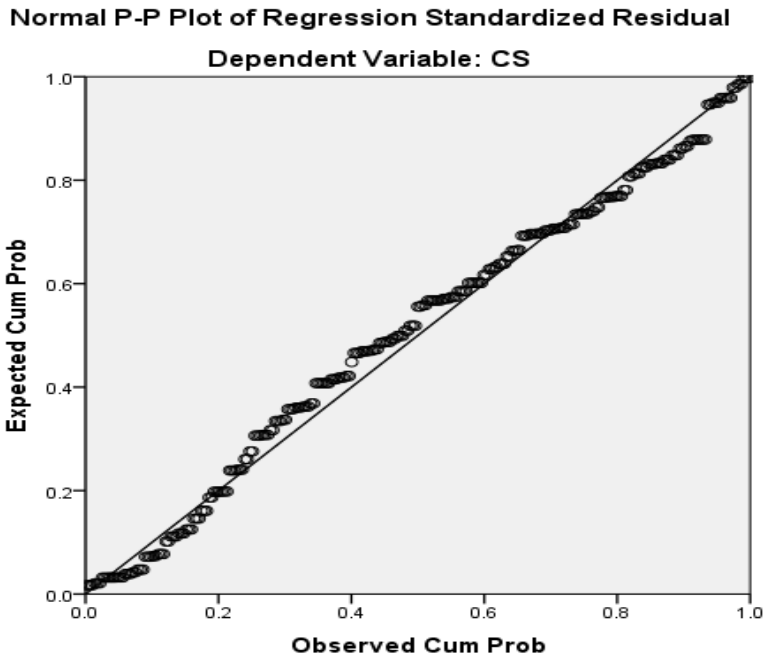

Figure 4.4: Linearity assumption test

Source, own survey generated from SPSS (2024)

- **Normality assumption test**

One of the assumptions of regression is that the sampling distribution of the Mean should be normal. To analyze the distribution of the values of dependents variables in the model associated

with the independent variables, normality test of histogram is used. The histogram which is showing the shape of the distribution will depict a symmetrical, bell-shaped curve, that have the most scores will be concentrated at the middle and the rest will be distributed towards the extremes as scores drift from the center, their frequency decreases.

As it can be seen from Figure 4.1 it can be determined that there is no major violation of normality assumption following the bell-shaped symmetrical curve centered on the center. Therefore, it can be concluded that normality is guaranteed as the histograms is normally distributed.

According to the study made by (Samson et al., 2015), normality assumptions can be checked from the residuals scatterplots which are generated as part of the multiple regression procedure. Residuals are the differences between the obtained and the predicted dependent variable scores. Histograms are bar graphs of the residuals with a superimposed normal curve that show distribution. Only P-P plot and histogram graph are used to check normality. Accordingly, the closer the dots lie to the diagonal line, the closer to normal the residuals are distributed. This is also evidenced by the work done by (Al-Hawary et al., 2023).

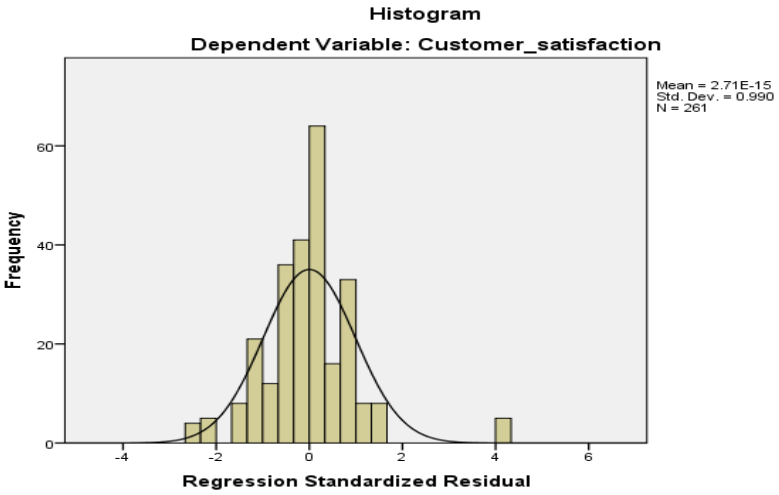

Figure 4.5: Normality assumption test

Source, own survey generated from SPSS (2024)

- **Multicollinearity assumption tests**

Multicollinearity is a statistical phenomenon that occurs when two or more independent variables in a regression model are highly correlated with each other. In other words, Multicollinearity indicates a strong linear relationship among the predictor variables. As a standard Variance Inflation Factor less than 10 is acceptable. VIF of less than or equal to 1 indicates poor collinearity among the independent variables. VIF of 1-10 is the very acceptable range in Multicollinearity test. As shown in Table 4.9, the VIF of the independent variable is below 10 and the tolerance value of all the variables is greater than 0.1.

Table 4.14: Multicollinearity assumption test

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Floor area related factor (FA)	.943	1.061
	Physical characteristics related factor (PC)	.916	1.092
	Physical unit related factor (PU)	.872	1.146
	Cost related factor (CF)	.924	1.082
	Quality related factor (QF)	.932	1.072

Source, own survey generated from SPSS (2024)

According to the study made by (Elias & Haile, 2020), Multicollinearity assumption is also satisfied. As stated by (Nguru & Gichuhi, 2018) the inter-variable correlations between the independent variables should not be strong. Accordingly, the inter-variable correlations between the independent variables were not strong enough to affect the relationship with the dependent variable, hence, the effects of multi-co linearity were minimized. This indicates that the assumption for Multicollinearity test is satisfied and can proceed to regression analysis of the variables.

- **Homoscedasticity assumption test**

Homoscedasticity refers to the error variance, or dependence of scattering, within a minimum of one independent variable within a particular sample.

When analyzing regression results, it's important to ensure that the residuals have a constant variance. When the residuals are observed to have unequal variance, it indicates the presence of Homoscedasticity. However, when the residuals have constant variance, it is known as homoscedasticity. As indicated in Figure 4.3, the residuals of all the independent variables are dispersed equally around the straight line made on the graph. This shows that the independent variable of the research did not have Homoscedasticity problem. Therefore, because of no Homoscedasticity problem on the independent variables it is possible to go to regression analysis.

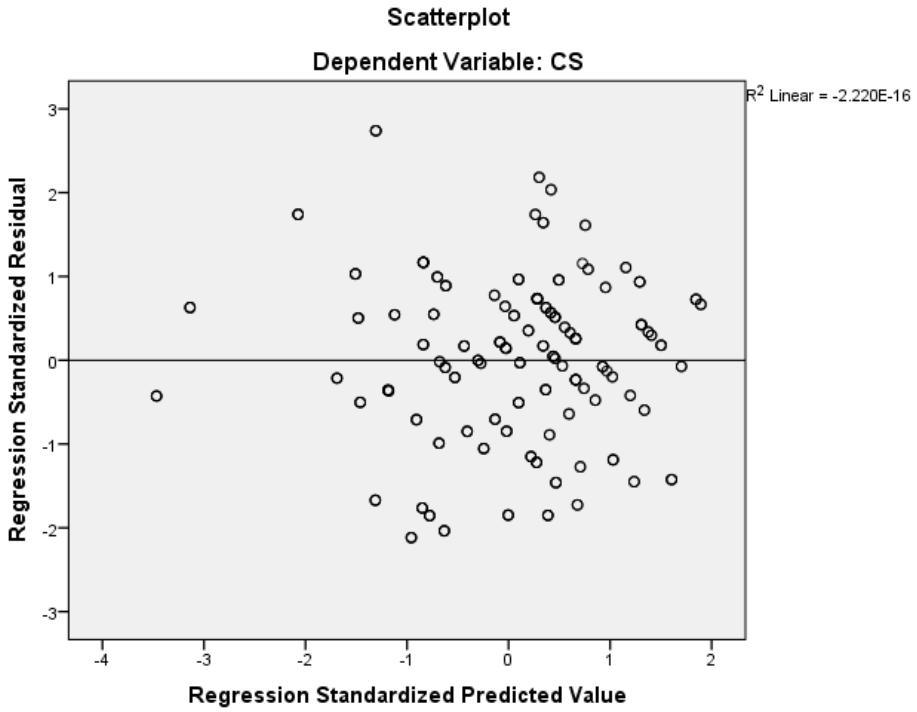

Figure 4.6: Homoscedasticity assumption test

Source, own survey generated from SPSS (2024)

- **Correlation between dependent and independent variables**

The table shows the correlation between the six variables: FA (floor area), Pc (Physical characteristics), PU (physical unit), CF (cost factor), QF (quality factor), and CS (customer satisfaction). The correlation coefficient is a measure of the strength and direction of the linear relationship between two variables. A correlation coefficient of 1 indicates a perfect positive correlation, a correlation coefficient of -1 indicates a perfect negative correlation, and a correlation coefficient of 0 indicates no correlation.

The table shows that all of the variables are significantly correlated with each other. The strongest correlation is between FA and Pc, followed by the correlation between PU (physical unit) and CF (quality factor). The weakest correlation is between QF (quality factor) and CS (customer satisfaction).

These results suggest that the six variables are all related to each other. However, it is important to note that correlation does not equal causation. Just because two variables are correlated does not mean that one causes the other.

Table 4.15: Pearson correlation

Correlations							
		FA	PC	PU	CF	QF	CS
FA	Pearson Correlation	1	.984**	.978**	.719**	.874**	.972**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	261	261	261	261	261	261
PC	Pearson Correlation	.984**	1	.951**	.883**	.735**	.841**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	261	261	261	261	261	261
PU	Pearson Correlation	.978**	.951**	1	.771**	.717**	.786**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	261	261	261	261	261	261

CF	Pearson Correlation	.719**	.883**	.771**	1	.844**	.755**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	261	261	261	261	261	261
QF	Pearson Correlation	.874**	.735**	.717**	.844**	1	.703**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	261	261	261	261	261	261
CS	Pearson Correlation	.972**	.841**	.786**	.755**	.703**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	261	261	261	261	261	261
**. Correlation is significant at the 0.01 level (2-tailed). FA (floor area), Pc (Physical characteristics), PU (physical unit), CF (cost factor), QF (quality factor), and CS (customer satisfaction).							

Source, own survey generated from SPSS (2024)

4.4.1.2 Regression analysis result

Based on the model summary, the R-squared value is 0.561, which indicates that the model explains 56.1% of the variation in the dependent variable. The adjusted R-squared value is 0.553, which is slightly lower than the R-squared value. This indicates that the model is not a perfect fit, but it is still a good fit. The standard error of the estimate is 0.46540, which indicates that the model is relatively precise.

Table 4.16: Model summary

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.749[a]	.561	.553	.46540
a. Predictors: (Constant), QF (Quality related factor), PC (physical characteristics related factor), FA (floor area related factor), PU (physical unit related factor), CF (cost related factor)				
b. Dependent Variable: CS (Customer satisfaction)				

Source, own survey generated from SPSS (2024)

The ANOVA table shows that the model is significant, F (5, 255) = 65.268, p < .001. This means that there is a statistically significant relationship between the predictors and the dependent variable. The R2 value is .561, which indicates that the model accounts for 56.1% of the variance in the dependent variable.

Table 4.17: Analysis of variance

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70.684	5	14.137	65.268	.000[b]
	Residual	55.232	255	.217		
	Total	125.917	260			
a. Dependent Variable: CS (Customer satisfaction)						
b. Predictors: (Constant), QF (Quality related factor), PC (physical characteristics related factor), FA (floor area related factor), PU (physical unit related factor), CF (cost related factor).						

Source, own survey generated from SPSS (2024)

Based on the coefficients table provided, the following are the results of the regression analysis: The constant is 0.993, which means that the predicted value of CS when all the independent variables are 0 is 0.993. The coefficient of FA is 0.090, which means that a one-unit increase in

FA is associated with a 0.090 unit increase in CS. The coefficient of PF is -0.115, which means that a one-unit increase in PF is associated with a 0.115 unit decrease in CS.

The coefficient of PU is 0.211, which means that a one-unit increase in PU is associated with a 0.211 unit increase in CS. The coefficient of CF is 0.483, which means that a one-unit increase in CF is associated with a 0.483 unit increase in CS. The coefficient of QF is -0.010, which means that a one-unit increase in QF is associated with a 0.010 unit decrease in CS. The results of the regression analysis suggest that FA, PU, and CF are positively associated with CS, while Pc is negatively associated with CS. The overall model is significant, as the p-value for the F-statistic is less than 0.05.

Table 4.18: Coefficients of regression

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.993	.259		3.838	.000
	FA	.090	.044	.089	2.060	.040
	PC	-.115	.042	-.116	-2.736	.007
	PU	.211	.059	.237	3.593	.000
	CF	.483	.057	.557	8.425	.000
	QF	-.010	.036	-.012	-.283	.777

a. Dependent Variable: CS (customer satisfaction)

b. Independent variable: FA (floor area), Pc (Physical characteristics), PU (physical unit), CF (cost factor) and QF (quality factor)

Source, own survey generated from SPSS (2024)

Beta Coefficients (β) shows the effects of each independent variable on the dependent variable. Furthermore, the values of the unstandardized Beta Coefficients in the Beta column of the Table above, indicate which independent variable (determinants of design change) makes the strongest contribution to explain the dependent variable when the variance explained by all other

independent variables in the models controlled. Thet value and the sig (p) value indicate whether the independent variable is significantly contributing to the prediction of the dependent variable. The findings of the regression analysis showed that Quality related factor, which has significance a value of .777 is not determinant for customer satisfaction. Floor area related factor, physical unit related factor, physical unit related factor and cost related factor have major effect on customer satisfaction. Based on the above result the linear equation formulates as follows.

CS = 0.993 + .090 FA – 115PC + .211PU + .483CF - .010QF + e

Where:

- ✓ QF (Quality related factor)
- ✓ PC (physical characteristics related factor)
- ✓ FA (floor area related factor)
- ✓ PU (physical unit related factor)
- ✓ CF (cost related factor)
- ✓ CS (Customer satisfaction)
- ✓ **e** = sampling error

4.4.2 Results from multiple choice question

In a multiple-choice question, respondents gave the answer that most closely aligns with their opinion from a set number of options. This helps to distinguish how the house owner was satisfied by their house. The findings are discussed below:

- From the collected valid questioner, most of the condominium house owners at arabsa site 6 believes that, the actual floor area of the condominium house is not the same to the area that they contracted to the bank.
- Most residences who have got area difference does not complain and they m about merely accept the difference.
- The resident believes that the major weakness they observe on common area provided in the parcel is less proportionality to the residence
- The data shous that, most dissatisfactory physical unites available on the building to the residence was water pump, Water tanker and electrical duct.

- Most residents answer about measures that has to be taken to increase the level of residence satisfaction on condominium houses was residence should be participated during the design phase and the government should give proper attention.

4.4.3 Results from open-ended question

When respondents are asked about additional variables that might contribute to residential dissatisfaction in open-ended question, house owners mentioned a lot of points that leads to residential dissatisfaction with the housing environment. Additionally, the house owners suggest about what measure was better to satisfy their need. The points are described as follows:

- Unfair house floor area distribution was acritical and the most common problem available on the site. This makes some house owner unsatisfied by the service and on the other, it makes satisfaction due to increased and decreased area.
- From the collected data most dissatisfactory thing to the residence was lack of infrastructure, power and supply, poor construction quality and problem to neighbor relation and the most satisfactory thing the resident identified was initial cost of the house and being lucky to own the house.

4.5 Discussion of findings

4.5.1 Satisfaction of condominium housing users

The descriptive statistics show that the mean for each independent variable was between 3.45 and 3.72, with a standard deviation of between 0.90 and 1.04. This suggests that the data is relatively normally distributed.

From the independent variable statements related to floor area the customer satisfaction on total area of the house transferred to the residence the mean value varies from 3.4521 to 3.6973 and the standard deviation varies from .90437 to .94683. This suggests that most condominium house users generally agreed with the statements listed under the table 4.4.

For the factor that shows the physical characteristics of the building the mean value of the respondent varied from 3.4713 to 3.4981 and the standard deviation varied in between .90519 to .95121. This indicates that most of the respondent agree on the statements listed under table 4.5.

As it indicated under table 4.6, the satisfaction of the condominium house owner on the factors related to physical unites, the mean value of the descriptive statistics falls in between 3.6973 and 3.5556. this means the house owner agree on statement listed under the table 4.6.

The mean value for cost related factor was between 3.5402 and 3.5134 as it indicated on table 4.7. This also shows that most respondent agree on statements given to cost related factor.

From table 4.8, most respondents agree on statement given to cost related factor. The mean value was in between 3.4751 and 3.3985.

From the above data Customer satisfaction with floor area in condominium buildings is generally not good. The average of the mean indicates that there were respondents who does not satisfy by the floor area of the house, the physical characteristics of the building, physical units of the building cost and quality.

Based on the open-ended questionnaire, it appears that there was a significant level of dissatisfaction among residents of condominium houses in Addis Ababa. The most common complaints are the difference between the actual and contracted carpet area, the quality of construction, and the lack of common areas.

The difference between the actual and contracted floor area was a major issue, as it can lead to residents feeling cheated. This is likely due to a combination of factors, such as poor construction management, lack of regulation, and shortage of human resources.

The quality of construction was also a major concern, with residents reporting problems such as cracks in the walls, leaks in the roof, and poor electrical wiring. This is likely due to the use of low-quality materials and workmanship.

The lack of common areas was another major issue, as it can make it difficult for residents to socialize and interact with each other. This is likely due to the fact that condominiums are often built in areas with limited space.

In addition to the issues raised in the questionnaire, there are a number of other factors that could contribute to resident satisfaction. These include the location of the condominium, the quality of the amenities, and the level of security. It is important to consider all of these factors when

designing and building condominiums, in order to create a place where residents can live comfortably and happily.

4.5.2 The extent and effect of resident house area and common area provided in the parcel on condominium house owners 'satisfaction.

From the survey data it was found that there are houses less than the contract area and some houses are greater in the area with the residence contracted to the bank. Depending on the type of house the owner occupies, the effect of floor area on satisfaction is summarized as follow.

Table: 4.19: summary of area difference in different house owner

No	House owner	Sample size	Area difference b/n actual and contract in more than 1m2 (%)	Positive area difference (%)	Negative area difference (%)	Remark
1	Studio owner	53	49%	28%	21%	Good satisfaction
2	One bed room owner	109	54%	38%	17%	Good satisfaction
3	Two bed room owner	112	73%	22%	51%	Low satisfaction
4	Three bed room owner	6	100%	50%	50%	Low satisfaction

Source: own computation (2024)

As it is indicated on the table the owner of condominium house who has greater negative floor area was dissatisfied. On the other hand, the owner of condominium house who has greater positive floor area was satisfied.

From open ended question it was found that there was adequate area provided for walk way, playground and common areas in the parcel, but the area given was not effective to utilize. This showed that condominium owners were not satisfied by its space utilization and management.

4.5.3 Key factors that affect the satisfaction of condominium house owners

One objective of this study was to determine the key factors that affect condominium house owner satisfaction. As it was indicated on regression analysis result, there was key factor that condominium owner can be affected.

From table 4.18, Beta Coefficients (β) shows the effects of each independent variable on the dependent variable. Furthermore, the values of the unstandardized Beta Coefficients in the Beta column of the Table above, indicate which independent variable (determinants of design change) makes the strongest contribution to explain the dependent variable when the variance explained by all other independent variables in the models controlled. Thet value and the sig (p) value indicate whether the independent variable is significantly contributing to the prediction of the dependent variable. The findings of the regression analysis showed that Quality, which has significance a value of .777 is not determinant for customer satisfaction. Floor area of the house physical unit, physical characteristics and cost have major effect on condominium owner satisfaction.

4.5.3.1 Factors Leading to Dissatisfaction:

From the open-ended question, the study found that, lack of infrastructure, unfair house floor area distribution, power and water supply, poor construction quality and problem to neighbor relation was the most dissatisfactory things.

4.5.3.2 Factors Leading to satisfaction:

From the interview it was found that the most satisfactory thing the resident identified was initial cost of the house and being lucky to own the house.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

From the study it was observed that most of the residents who owned two-bedroom houses are highly affected by area difference. The gap between the actual and what it transferred to the residence was mostly observed on two-bedroom house types. One the other hand there was excess floor area transferred to the residence in one bedroom house type.

The study shows that, from the selected sample 49% of studio houses owner, 54% of one bed room houses owner, 17% of one bed room houses owner, 73% of two bed room houses owner and all three-bed room houses owners had area difference greater than $1m^2$ compared to actual area.

From the finding it was observed that there was adequate area provided for walk way, playground and common areas in the parcel, but the area given was not effective to utilize. This showed that condominium owners were not satisfied by its space utilization and management.

The study concluded that customers who handover larger areas than the contracted area have a high level of satisfaction. However, from this it can be concluded that handing overing larger area to customer's results in a lower area to some other customers. Therefore, the dissatisfaction of customers was the result of unfair area transfer to the residents.

The study observed that the condominium house owner satisfaction was not in satisfactory level.

The study found that most residences of the condominium are generally satisfied with the floor area their house, physical features, and physical unit in Addis Ababa in the case of Arabsa site 6.

The key factors that affect condominium user satisfaction was floor area of the house, physical unit, physical characteristics and cost.

It also found that lack of infrastructure, unfair house floor area distribution, power and water supply problem, poor construction quality and problem to neighbor relation was the most dissatisfactory things.

Additionally, the study found that the most satisfactory thing the resident identified was initial cost of the house and being lucky to own the house.

5.2 Recommendations

Based on the findings of the study, the following recommendations are made:

- The housing authority should establish a robust and continues mechanism to improve the level house owner satisfaction.
- The study recommends that the government and the developers of condominium houses in Addis Ababa should take the necessary measures to address the key factors that result in customer dissatisfaction in condominium residence in the case of Arabsa site 6.
- The study also recommends that further research should be conducted on the factors that affect customer satisfaction on real estate buyers, so that it is helpful how the current practice was in real estate developer.
- The housing authority should conduct regular customer satisfaction surveys to identify areas for improvement and implement appropriate measures to enhance customer satisfaction.

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APPENDIX

Appendix A: Questionnaire

Assessment of customer satisfaction on condominium residence in Addis Ababa in the case of Arabsa 6 site.

My name is Ashagir Chebud. I am a graduate student in construction technology and management at Addis College. Now I am conducting research in the area of housing to investigate the factors that affect customer's satisfaction on condominium residence. The purpose of the study is for the partial fulfillment of the requirements of masters of construction technology and management at Addis College. For the successful accomplishment of the research, your genuine response is an important role and the responses will be used as a valuable and primary input for the study. For this reason, you are kindly requested to take few minutes of your busy schedule and genuinely fill this questionnaire. Confidentiality: I would like to assure you that this research is only for academic purpose, that is for Partial fulfillment of Master's program in construction technology and management at Addis College. Thank you in advance for your genuine, honest, and prompt response!

There is no need for writing your name.

Please put (√) in the place where the choice is appropriate for you.

Part I: Demographic background of respondents

Please add (√) in the box below which is appropriate: for you:

1. Gender

   ☐ Male

   ☐ Female

2. What is your educational level?

   ☐ Diploma

   ☐ B.Sc.

   ☐ M.Sc. and above

If other, please specify……

Part II: Questioners to be filled by residence

The questions under this part are presented on a five-point scale. How do you rate the following statements in relation to satisfaction level? Where, 1 = strongly disagree, 2 = disagree, 3 = Neutral, 4 = agree, 5 = strongly agree

	Factors for customer satisfaction	Rating				
No	**1. Area related factor**	**1**	**2**	**3**	**4**	**5**
1.1	The total area of the house transferred to the residence is not the same as it is indicated in the contract agreement.					
1.2	The common area provided on the building is satisfactory					
1.3	The area provided to parking in the parcel is satisfactory.					
1.4	The area provided to green area in the parcel is satisfactory.					
1.5	The area provided to walk way in the parcel is satisfactory.					
1.6	The area provided to play ground in the parcel is satisfactory.					
1.7	The total carpet area difference between what contracted to the residence and actual on site is negligible and can be considered as human error					
1.8	There is significant difference between the total carpet area that contracted to the residence and actual area (transferred) of the house					
	2. Physical characteristics related factor					
2.1	The interior design of the house is attractive.					
2.2	The room height of the building is not satisfactory.					
2.3	The building is not designed in considering neighborhood relations.					
2.4	The building orientation is well designed in response to wind.					
2.5	The building orientation is well designed in response to sun light					
2.6	Number of electrical sockets installed in the house is sufficient.					
2.7	Number of light points installed in the house is sufficient					

2.8	Number of light points installed in the house is sufficient					
	3. Physical unit related factor					
3.1	The electrical duct of the building is not properly installed					
3.2	The electrical duct installation is designed to be comfortable for maintenance					
3.3	The sanitary duct of the building is properly installed					
3.4	The sanitary duct installation is designed to be Uncomfortable for maintenance					
3.5	The main stair case of the building is properly located					
3.6	The stair case of the building provides proper ventilation					
3.7	The stair case of the building is exposed to enough light					
3.8	Fire escape stair is adequately provided in the building					
3.9	The water tanker installed on the building doesn't provide sufficient service to the residents					
1.10	The electrical duct of the building is not properly installed					
	4. Cost related factors					
4.1	The house is affordable in cost for the residence					
4.2	The house is cheaper relative to the market					
4.3	The house fulfills low-cost housing project delivery					
4.4	The value of the house is attractive when it is considered as an asset to the future					
4.5	The house is not well finished so that it does incur additional cost					
	5. Quality related factor					
5.1	How do you rate the quality of the condominium in terms of design?					
5.2	The building finishing material is low quality					
5.3	How do you rate the quality of the building in terms of access to public servant institutions (hospital, school police)					
5.4	How do you rate the quality of the condominium in terms of environmental compliance?					

5.5	The building construction quality is not convenient.					
	6. Customer Satisfaction					
6.1	How do you rate your satisfaction level related to net floor area of your house, common area provided in the building and common area provided in the parcel?					
6.2	How do you rate your satisfaction level related physical characteristics of your hose like interior design, room height, building orientation, installations, and its suitability to living?					
6.3	How do you rate your satisfaction level related physical unites available on the building like staircase, duct water pump and water tanker					
6.4	What is your satisfaction level on condominium hose in relation to initial cost, life time cost, the value it has to the future					
6.5	What is your satisfaction level on condominium hose construction, method of construction, building integrity as a customer					

Part III: Multiple choices

Direction: the following statement describes your feeling (satisfaction) about the condominium house. Make a circle on the choice that you feel it is correct.

1. Do you think that the as-built or the built-up area of the condominium house is the same to the area contracted to the residence?

A. Yes ☐ B. No ☐

2. If your answer is No, what do you think about the cause that brings the area difference between actual and that transferred to the residence?

A. Design modification

B. Poor construction management

C. Lack of knowledge and experience

D. lack of regulation system

E. Shortage of human resource

F. if any……..

3. Have you faced carpet area difference between actual and what you have contracted to the bank?

A. Yes ☐ B. No. ☐

4. If your answer is yes for the above question, what did you do then?

A. I merely accept the difference

B. I claim to the Addis Ababa Housing project and it is now corrected

C. I claim to the Addis Ababa Housing project but there is no answer

D. Any other ……. ……..

5. If your answer is yes for the above question number 3, what measure has to be taken to correct the problem?

A. The residence should get equivalent house.

B. Negotiate with the Addis Ababa Housing project

C. Measure the whole residence house area and adjust the contract

D. specify if other_____

6. What is major weakness that you observe on common area provided in the parcel like parking, walk way playground

A. Not proportional to the residence

B. It has no full functionality

C. There is no weakness

D. Specify if other……..

7. What measure has to be taken to mitigate factors that affect built up area?

A. Improve construction management system

B. There must be a strong regulation

C. Change method of delivery system

D. All

E. Any other ……

8. From different physical unites available on the building which one is more dissatisfactory to the residence? (You can select more than one choice)

A. Electrical Duct

B. Sanitary Duct

C. Main Stair case

D. fire escape stair case

E. water pump

F. Water tanker

G. Specify if any……..

9. From physical characteristics of the house which one is more dissatisfactory to the residence? (You can select more than one choice)

A. Room height

B. Number of electrical socket provided

C. Number of light point provided

D. Overall interior design

E. Specify if any……

10. What measure has to be taken to increase the level of residence satisfaction on condominium houses regarding to total carpet area, physical characteristics of the house and physical unit on the building?

A. Residence should be participated during the design phase

B. The client, contracture and consultant should hire qualified worker

C. The government should give proper attention

D. It needs to see other county experience on housing projects

E. Specify if any……..

Part IV. Open ended question

The following questions are prepared to get your opinion about resident or customer satisfaction on condominium houses. Be free to write what you feel about the given statement.

1. What do you think about the carpet area difference between actual on site and the area that the residence contracted to the bank?

……
……
……
……

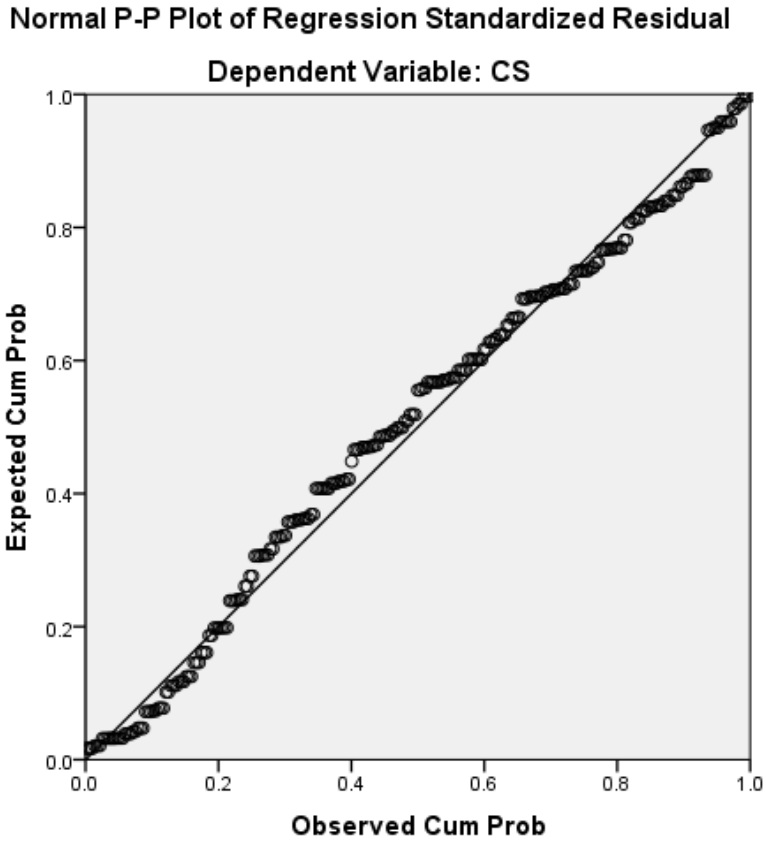
2. Which part of the condominium house is more dissatisfactory and which part is satisfactory to the residence?

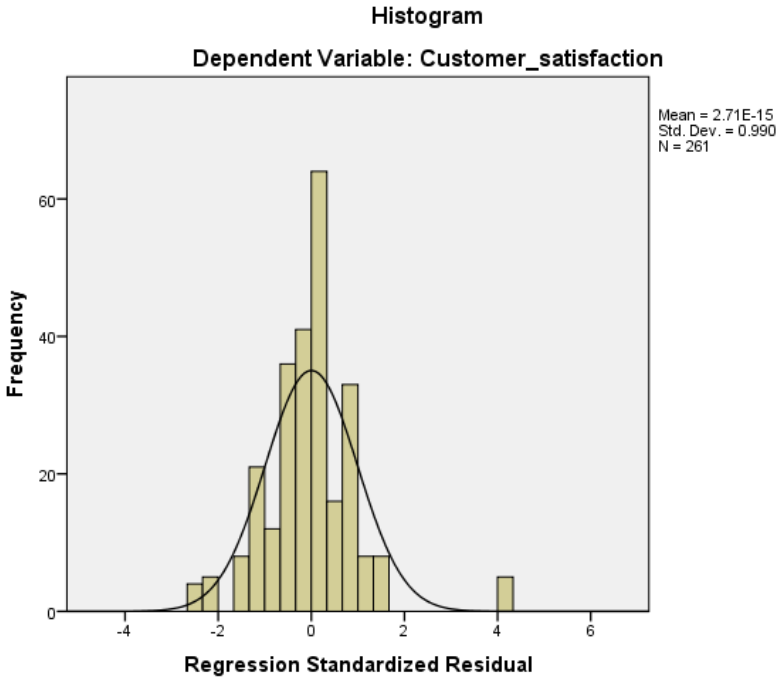
……
……
……
…….

3. In your opinion, what measure has to be taken to increase the level of residence satisfaction?

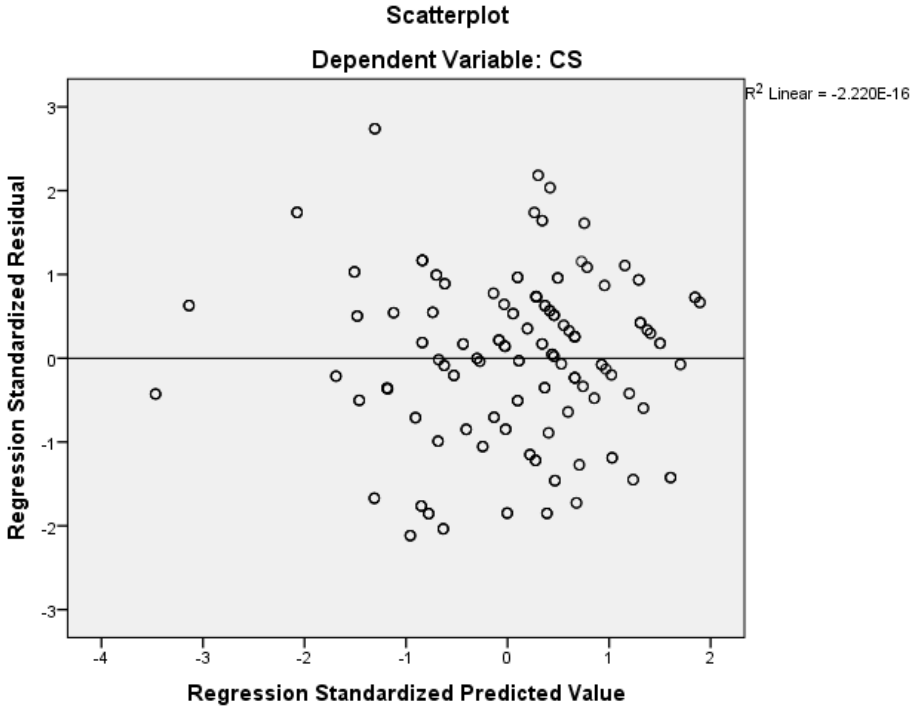
……
……
……
……..

Appendix B: Analysis Data





Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Floor area related factor	.943	1.061
	Physical related factor	.916	1.092
	Physical unit related factor	.872	1.146
	Cost related factor	.924	1.082
	Quality related factor	.932	1.072



Correlations							
		FA	PC	PU	CF	QF	CS
FA	Pearson Correlation	1	.984**	.978**	.719**	.874**	.972**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	261	261	261	261	261	261

PC	Pearson Correlation	.984**	1	.951**	.883**	.735**	.841**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	261	261	261	261	261	261
PU	Pearson Correlation	.978**	.951**	1	.771**	.717**	.786**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	261	261	261	261	261	261
CF	Pearson Correlation	.719**	.883**	.771**	1	.844**	.755**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	261	261	261	261	261	261
QF	Pearson Correlation	.874**	.735**	.717**	.844**	1	.703**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	261	261	261	261	261	261
CS	Pearson Correlation	.972**	.841**	.786**	.755**	.703**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	261	261	261	261	261	261
**. Correlation is significant at the 0.01 level (2-tailed).							

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.749[a]	.561	.553	.46540
a. Predictors: (Constant), QF (Quality related factor), PC (physical characteristics related factor), FA (floor area related factor), PU (physical unit related factor), CF (cost related factor)				
b. Dependent Variable: CS (Customer satisfaction)				

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	70.684	5	14.137	65.268	.000[b]
	Residual	55.232	255	.217		
	Total	125.917	260			
a. Dependent Variable: CS (Customer satisfaction)						
b. Predictors: (Constant), QF (Quality related factor), PC (physical characteristics related factor), FA (floor area related factor), PU (physical unit related factor), CF (cost related factor)						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.993	.259		3.838	.000
	FA	.090	.044	.089	2.060	.040
	Pc	-.115	.042	-.116	-2.736	.007
	PU	.211	.059	.237	3.593	.000
	CF	.483	.057	.557	8.425	.000
	QF	-.010	.036	-.012	-.283	.777
a. Dependent Variable: CS						

Appendix C: Image from the site

በአዲስ አበባ ቤቶች ልማትና አስተዳደር ቢሮ
ቤቶች ልማት ኮርፖሬሽን

የ 20/80 ፕሮግራም የጋራ መኖሪያ ቤት ቁልፍ መረካከቢያ ቅጽ

የቤቱ ባለቤት ስም	
ፕሮግራሙ	20/80
የተላለፈበት አግባብ/ዙር	እጣ
ቤቱ የሚገኝበት ክ/ከተማ	ለሚኩራ
ቤቱ የሚገኝበት ወረዳ	06
ቤቱ የሚገኝበት ሳይት	ቦሌ አራብሳ 6
ህንጻ ቁጥር	
ወለል	7
የቤት ቁጥር	1094/75
የቤት አይነት	ባለ ሁለት መኝታ
የቤቱ ስፋት	71.74

ቅጹ ያዘጋጀው
ስም:-ትርንጎ መብሬ ወርቁ
ፊርማ :-
ቀን:-26/08/2015

መቀ ባለቤት
ስም:-
ፊርማ :-
ቀን :-

አስረካቢ
ስም:-
ፊርማ :-
ቀን:-

ግልባጭ
1.
2. ቤቶች ልማት ኮርፖሬሽን
3. ቤቱ ለሚገኝበት ቅርንጫፍ ጽ/ቤት

ቦሌ አራብሳ 6

Desk study data type

Electrical power meter installation area

Electrical duct

Main Stair case beam

Incomplete Electrical Duct