



College of Technology and Built Environment

School of Built Environment

**Amenities and Their Influence on the Real Estate Value:
The Case of Four selected sub cities in Addis Ababa**

By: Habtamu Misganaw

Advisor: Teshome Tefera (PhD)

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DECLARATION

I, the undersigned, declare that this thesis entitled that *Amenities and Their Influence on the Real Estate Value: The Case of four selected sub cities in Addis Ababa* is my original work and has not been presented for any degree in any other University and that all the sources of materials used for the thesis have been duly acknowledged.

Declared by: Habtamu Misganaw

Signature:

Date :

AMENITIES AND THEIR INFLUENCE ON THE REAL ESTATE VALUE: THE CASE OF FOUR SELECTED SUBCITIES IN ADDIS ABABA

By: Habtamu Misganaw

JUNE, 2026

Approved by Examining Board, Chairman, and graduate committee

_____ Signature _____ Date _____

Advisor

_____ Signature _____ Date _____

Internal Examiner

_____ Signature _____ Date _____

External Examiner

_____ Signature _____ Date _____

Chair Person

_____ Signature _____ Date _____

Department head

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LIST OF ABBREVIATION AND ACRONYMS

AAU	Addis Ababa University
DURP	Department of Urban and Regional Planning
MA	Master of Arts
ANOVA	Analysis of Variance
SLR	Simple Linear Regression
MLR	Multiple Linear Regression
SQM	Square Meter
SD	Standard Deviation
KII	Key Informant Interview
KI	Key Informant (used in some tables)
STATA	STATA statistical software
ETB	Ethiopian Birr
β	Regression coefficient (beta)
P	P value (statistical significance)
N	Sample size / number of observations

ABSTRACT

This study aimed to assess the influence of neighborhood amenities on real estate property values in the Nifas Silk-Lafto, Kirkos, Bole, and Lemi Kura sub-cities of Addis Ababa, Ethiopia. A convergent mixed-methods design was employed, combining a quantitative cross-sectional survey of 205 real estate buyers with qualitative interviews of key informants from selected real estate companies. Quantitative data were analyzed using descriptive statistics, Analysis of Variance (ANOVA), and multiple linear regression, while qualitative data were analyzed thematically. Findings from both approaches were triangulated to enhance the validity of the results. The study found that the mean real estate price was Ethiopian birr 83,009.76 per square meter (SD = 12,835.68). Multiple linear regression analysis revealed that security services ($\beta = 7,715.71$, $p = 0.003$), proximity to schools ($\beta = 5,012.78$, $p = 0.001$), access to public transportation ($\beta = 5,015.36$, $p < 0.001$), and healthcare facilities ($\beta = 4,290.13$, $p = 0.003$) had significant positive effects on property values. Additionally, the availability of parking spaces ($\beta = 2,135.67$, $p = 0.076$) and proximity to green spaces and parks ($\beta = 2,518.55$, $p = 0.058$) positively influenced property prices at the 10% significance level. Qualitative findings further indicated that neighborhood amenities play a critical role in enhancing customer satisfaction and increasing property values. The study concludes that neighborhood amenities are important determinants of real estate property values in Addis Ababa. Therefore, real estate developers should prioritize the provision and accessibility of key amenities to enhance property values, improve buyer satisfaction, and attract potential customers.

Keywords: Real Estate Price, Neighborhood Amenities, Hedonic Pricing, Regression Analysis, Ethiopia

1. INTRODUCTION

Amenities are defined as desirable features that enhance the value of the real estate property; they improve comfort, recreation, and convenience beyond basic needs such as roofs and walls. Amenities can be tangible, such as smart technology, a gym, and a pool, or intangible, like location, security, and view. They are key strategies for real estate developers to increase the property's value and to overcome their competitors, as real estate property around the amenities offers a better lifestyle.

This chapter addresses a detailed description of the background, statement of the problem, objectives, research questions, significance, scope, and organization of the paper. The background shows the real estate market as one of the cornerstones of the development and urbanization. Amenities are one of the key factors that increase the value and desirability of the real estate property. The statement of the problem further described the influence of amenities on the value of the real estate property based on the empirical evidence. This chapter also presents study's objectives, which are to assess the extent of the key amenities and their influence on property price. The significance sub-section addresses the direct beneficiaries of this study, including the buyers, developers, and scholars. Furthermore, this study clearly stated the scope for the study from different perspectives, including the time, geographical location and contents. Lastly, the organization of this paper section addresses the contents covered in the whole thesis.

1.1. Background of the Study

The real estate market is a critical driver of economic development and urbanization, providing housing, commercial spaces, and infrastructure that shape the quality of life in cities (W. Gao *et al.*, 2024). Real estate property values are influenced by several factors, including location, property characteristics, construction quality, and neighborhood amenities (Ersoz *et al.*, 2018). Among these factors, amenities play an important role in enhancing the attractiveness and functionality of residential areas, thereby affecting property demand and market value (Ferlan *et al.*, 2017).

Previous studies have shown that amenities such as access to schools, healthcare facilities, public transportation, parks, and commercial centers can significantly influence property prices

(Gyourko *et al.*, 2013). Properties located near desirable amenities generally command higher values because they offer greater convenience and improve residents' quality of life (Leontev & Mayburov, 2021; Rosenthal, 2014). However, the magnitude and nature of these effects vary across locations due to differences in socioeconomic conditions, urban development patterns, and buyer preferences (Ersoz *et al.*, 2018).

Despite substantial international evidence on the relationship between amenities and property values, there remains limited understanding of which amenities have the greatest influence in specific local contexts (Mulligan & Carruthers, 2011). This knowledge gap is particularly evident in rapidly urbanizing cities in developing countries, where urban growth and infrastructure expansion are transforming housing markets.

In Addis Ababa, Ethiopia, the real estate sector has expanded considerably in recent years as a result of rapid urbanization, population growth, and increasing investment in housing and infrastructure (Ethiopia, 2021). Nevertheless, empirical evidence regarding the influence of neighborhood amenities on real estate property values remains scarce. Understanding this relationship is essential for developers, policymakers, and homebuyers to make informed decisions regarding property development, investment, and urban planning. Therefore, this study examines the influence of neighborhood amenities on real estate property values in selected sub-cities of Addis Ababa.

1.2. Statement of the Problem

Despite the rapid growth of Addis Ababa's real estate sector, there is no empirical evidence demonstrating how specific neighborhood amenities such as healthcare facilities, educational institutions, security services, public transportation, parking facilities, and green spaces influence residential property values.

International studies consistently indicate that neighborhood amenities significantly affect real estate prices; however, the magnitude and direction of these effects vary across countries and urban settings due to differences in socioeconomic conditions, infrastructure development, and housing market characteristics. Consequently, findings from other countries cannot be directly generalized to the Ethiopian context.

In Ethiopia, the limited studies conducted on residential real estate pricing have primarily focused on structural and locational characteristics of properties. For example, Assefa (2017) identified location, physical property characteristics, and accessibility as important determinants of property prices, while Mekuria *et al.* (2024) found that factors such as plot size, floor area, housing characteristics, and distance from the main road significantly influence residential property values. Although these studies considered accessibility-related variables, they did not examine the influence of a comprehensive set of neighborhood amenities, such as proximity to schools, healthcare facilities, security services, public transportation, recreational areas, parking facilities, and green spaces. Therefore, the specific contribution of neighborhood amenities to residential real estate values in Addis Ababa remains insufficiently understood.

Given the increasing importance of real estate investment and urban development in Addis Ababa, understanding how neighborhood amenities affect property values is essential for developers, policymakers, investors, and homebuyers. Therefore, this study seeks to assess the influence of neighborhood amenities on residential real estate property values in selected sub-cities of Addis Ababa.

1.3. Objectives of the Study

1.3.1. General Objective

The general objective of this study was to assess the influence of neighborhood amenities on residential real estate property values in selected sub-cities of Addis Ababa, Ethiopia.

1.3.2. Specific Objectives

To achieve the general objective, the study was guided by the following specific objectives:

- To categorize the neighborhood amenities available around residential real estate developments in the study area.
- To determine the influence of neighborhood amenities on residential real estate prices per square meter using multiple linear regression analysis.

- To explore the perceptions of real estate developers regarding the influence of neighborhood amenities on property values.

1.4. Research Questions

This study was guided by the following research questions:

- What types of neighborhood amenities are available around residential real estate developments in the selected sub-cities of Addis Ababa?
- To what extent do neighborhood amenities influence residential real estate prices per square meter in the selected sub-cities of Addis Ababa?
- What are the perceptions of real estate developers regarding the influence of neighborhood amenities on residential real estate property values?

1.5. Significance of the Study

This study focused on investigating the buyers' view on the importance of amenities around the real estate and their satisfaction with them. It also examined the influence of amenities on real estate values. It explores the most common amenities, including security service, parking service, transportation infrastructure, educational institutions, healthcare facilities, gyms and recreational spaces, and shopping and market service, and their impact on property value. The research analyzed how proximity, availability, and accessibility of amenities shape real estate prices.

The findings of this study primarily benefit the buyers to see different perspectives before deciding to buy a residential or commercial property. In addition to the site and the quality of the construction materials, checking the quality and availability of amenities in the surround is imperative both to lead quality life and to gain additional benefit over time. The real estate developers are also benefited from this study as this study reports the buyer's satisfaction with the amenities in the surrounding. Hence, to attract more buyers/customers in the future real estate developers design different strategies to fulfil quality amenities around their real estate. The urban planners and policy makers are also benefited from the finding of this study both to fulfil the resident's expectation and to evenly distribute government amenities. Furthermore, researchers with similar interest are also benefited from this study to explore the barriers of *real estate* market in different corners of the country by using these findings as a baseline/reference.

1.6. Scope of the Study

This study was conducted in selected sub-cities of Addis Ababa, namely Nifas Silk-Lafto, Kirkos, Bole, and Lemi Kura, and focused on five real estate companies: Nassew, Noah, Gift, Ayat, and Enyi. The study considered residential real estate properties delivered to customers during the last seven years. Data were collected at a single point in time from property owners and real estate developers; therefore, the findings reflect the prevailing conditions during the study period and do not indicate changes or trends over time.

Geographically, the study was limited to selected real estate developments located in the Bole, CMC, Jemo, and Kazanchis areas of Addis Ababa. Consequently, the findings are generalizable only to the selected study areas and real estate developments rather than to the entire city of Addis Ababa or other regions of Ethiopia.

The study was thematically restricted to examining the influence of selected neighborhood amenities on residential real estate prices. Specifically, it focused on the availability and proximity of amenities such as security services, public transportation, educational institutions, healthcare facilities, parks, green spaces, gyms, recreational centers, and utility services. The study did not assess the quality of these amenities, including service standards, maintenance conditions, infrastructure quality, or user satisfaction levels, because these aspects were beyond the scope of the research objectives and measurement framework.

Methodologically, the study employed a convergent mixed-methods approach consisting of an analytical cross-sectional survey and qualitative interviews with real estate developers. The quantitative component examined the relationship between neighborhood amenities and residential property prices using descriptive and inferential statistical techniques, while the qualitative component explored developers' perceptions regarding the contribution of amenities to property values.

Therefore, the findings should be interpreted within the context of the selected locations, amenities, study participants, and research design. Future studies may incorporate the quality dimensions of amenities to provide a more comprehensive understanding of their influence on residential real estate values.

1.7. Limitations of the Study

The study was geographically limited to selected real estate developers located in Bole, CMC, Jemo, and Kazanchis Sub cities. These findings of this study are only generalizable to the selected location rather than to the whole of Addis Ababa or any other regional one. Furthermore, the study was methodologically limited to an analytical cross sectional study and qualitative exploration of real estate developers' views. In addition to these stated constraints, several other limitations should be noted: the sample covers only four sub-cities and five developers, so results may not represent other sub-cities, informal markets, or the broader city; the cross-sectional design captures associations at a single point in time and cannot establish causal or temporal trends; amenity measurement emphasizes proximity and availability rather than detailed measures of quality, capacity, or reliability, which could alter estimated price effects; buyers were sampled from selected developers, introducing potential selection bias related to buyer characteristics and developer marketing; some variables rely on self-reported data and may be affected by recall or social desirability bias; unobserved factors (for example, micro-neighborhood reputation or planned infrastructure) could confound regression estimates; the qualitative component draws on a small number of developer interviews and may underrepresent smaller or informal developers; and statistical inference depends on regression assumptions (linearity, normality, homoscedasticity, low multicollinearity), so any violations reduce precision or introduce bias. Taken together, these limitations counsel caution when generalizing the estimated amenity premiums beyond the sampled projects and time frame; the findings are most applicable to similar local contexts, and future research should expand geographic coverage, use longitudinal designs, and incorporate more granular measures of amenity quality to strengthen causal inference and external validity.

1.8. Organization of the Paper

The thesis was organized in six chapters. The first chapter introduced the study by providing detailed background information, statement of the problem, research objectives, research questions, significance and scope of the study. Chapter 2 addressed relevant literature reviews, incorporating both theoretical and empirical perspectives to establish the study's foundation and identify gaps. Chapter 3 presented the research methodology, describing the study setting, study design sample size determination, sampling techniques, data collection tools and data collection

techniques, study variables in their measurement, operational definition, data quality control, and statistical analysis. Chapter four included detail presentations of the results, which includes the descriptive and inferential statistics, detail presentation of the qualitative data, diagnostic tests for the final model, and interpretations of the findings based on the key objectives of this study. Chapter 5 addressed the discussion; this section started with summarizing the key findings and compare the findings of this study with previous empirical evidences, and provide scientific justification. It also addressed the practical application and scientific contribution of the study. In addition, it the last section it addresses the methodological strength and limitation of this study. The last chapter, chapter six, included the conclusion and recommendation section, which was organized in two subsections, conclusions and recommendations. The conclusion subsection addressed the key findings and the recommendation section include practical suggestions in line with the key findings.

2. LITERATURE REVIEW

This chapter reviews theoretical and empirical literature on the relationship between neighborhood amenities and residential real estate property values. The review focuses on amenities examined in this study, including security services, educational facilities, healthcare facilities, public transportation, parks and green spaces, recreational facilities, and utility services. The chapter also reviews evidence from Ethiopia and presents the conceptual framework that guides the study.

2.1. The Concept of Amenities in Real Estate

2.1.1. Definition of Amenities

Amenities in real estate are defined as the features, facilities, or services that enhance the attractiveness, convenience, and livability of a location or property. They are elements that make a property more desirable, providing additional comfort, convenience, or enjoyment to the residents. Amenities can be either intrinsic to the property like in-ground pool or external such as nearby parks, schools, or public transportation systems. Their presence, quality, and proximity to the real estate often influence property prices by improving the quality of life, accessibility, and desirability of an area (Cajias *et al.*, 2025; Mulligan & Carruthers, 2011; Yuan *et al.*, 2020). Amenities play a significant role in shaping consumer preferences in real estate markets. They are central to housing demand, and the type and variety of amenities available in a given location can have a profound impact on the real estate market dynamics (Leishman & Goel, 2025). Properties near key amenities command higher prices than those without (Beracha *et al.*, 2018).

2.1.2. Classification of Amenities

Amenities can be classified in a variety of ways, depending on their nature and function (Schaeffer & Dissart, 2018). The common classification used in real estate studies:

2.1.2.1. Essential Amenities

Essential amenities are those that are considered necessary for daily living, contributing to the basic functionality and habitability of a property (Kapur, 2024). These amenities include health facilities, educational facilities, transportation access, utilities, and security stations. Healthcare facilities: Proximity to hospitals, clinics, and pharmacies is crucial for most people Gu *et al.*

(2024). Properties near healthcare facilities often see higher demand due to the perceived convenience and security. Education facilities: Schools, colleges, and universities are key for families with children and can significantly increase property values. Proximity to good educational institutions are often one of the top priorities for homebuyers (Black, 1999). Transportation: Accessibility to major roads, bus stops, and public transportation systems (e.g., metro, train stations) is a vital amenity. Proximity to transportation hubs reduces commuting time, which in turn increases the desirability of a location (Berawi *et al.*, 2020; Zhou *et al.*, 2022). Utilities: Basic utilities such as water, electricity, gas, and waste disposal systems are essential for the proper functioning of any property (R. Gao *et al.*, 2024). These are considered foundational amenities for both residential and commercial properties. Security: Proximity to police stations and fire departments is another essential amenity that impacts the safety and security of a neighborhood. Well-secured areas tend to attract more buyers and tenants (Odubiyi *et al.*, 2019).

2.1.2.2. Luxury or Lifestyle Amenities

These are amenities that improve the living experience but are not considered essential for basic living. Luxury amenities typically cater to higher-income buyers and tenants seeking higher levels of comfort and exclusivity (Mulligan & Carruthers, 2011). These amenities include: recreation and leisure, shopping and dining, entertainment, and social spaces. Recreation and Leisure: Parks, fitness centers, swimming pools, sports complexes, and golf courses contribute significantly to the quality of life in residential areas. High-end developments often include recreational amenities to attract affluent buyers (Lin *et al.*, 2013). Shopping and Dining: Proximity to shopping malls, retail outlets, restaurants, and cafes provides convenience and adds to the lifestyle value of an area. Urban development's often prioritize these amenities to create vibrant, mixed-use environments (Shen *et al.*, 2020). Entertainment: Cinemas, theatres, museums, and cultural centers can transform an area into a lively, attractive location, thereby increasing property values (Rosen, 1974). Social Spaces: Community centers, meeting rooms, and lounges are also considered luxury amenities that contribute to a social, collaborative environment within a neighborhood.

2.1.2.3. Economic and Functional Amenities

These amenities focus on enhancing the functionality and economic viability of an area, influencing property demand (Mulligan & Carruthers, 2011). They include: Commercial Services: Banks, post offices, supermarkets, and retail services add to the convenience of residents and businesses. A nearby commercial hub can increase foot traffic and local business opportunities, which drives up property demand (Debrezion *et al.*, 2011). Business Infrastructure: Office buildings, convention centers, and co-working spaces play a role in making an area economically viable, especially for business owners and corporate employee (Bartik & Smith, 1987). Public Services: Access to government offices, legal services, and post offices is important in urban centers, contributing to the attractiveness of an area as a place to live or do business (Blomquist *et al.*, 1988).

Environmental Amenities: These amenities relate to natural or green resources that enhance the livability and aesthetic appeal of a location (Schaeffer & Dissart, 2018). These include: Sustainable Infrastructure: Features like solar panels, green roofs, and eco-friendly buildings are increasingly important for buyers who prioritize sustainability. Such amenities can also reduce utility costs and promote energy efficiency (Nassauer, 2008). Natural Resources: Proximity to lakes, rivers, forests, and beaches can dramatically increase property values due to their aesthetic appeal and recreational opportunities (White & Leefers, 2007). Climate and Air Quality: Areas with cleaner air, moderate climates, and natural beauty are highly valued, particularly by those seeking a healthier lifestyle (Miłuch & Kopczewska, 2024).

2.1.3. Influence of Amenities on Property Price

The international literature provides a rich but context-specific body of evidence on how amenities affect real estate prices. Rather than isolated case studies, the following thematic synthesis groups findings by amenity type, highlights consistencies and contradictions across contexts, critiques methodological approaches (e.g., hedonic models versus regression), and evaluates generalizability, particularly to developing-country settings such as Ethiopia.

2.1.4. Proximity to Security Service Stations

A study conducted in Brazil's metropolitan area showed that increasing the sense of security in the home by one unit increased average values by R\$1,513 (US\$757) (Vetter *et al.*, 2013). Another study conducted in Cape Town, South Africa demonstrated that proximity to a police

station increase the rental price of the residential property (Odubiyi *et al.*, 2019). These results are consistent with the broader pattern that perceived safety acts as a strong price driver; however, the studies rely on different operationalizations of “security” (subjective perception versus physical proximity), limiting direct comparability. In rapidly urbanizing African contexts the magnitude of the effect may be even larger due to higher baseline insecurity levels.

2.1.5. Proximity to Transportation Amenities

One of the well-documented findings in real estate studies is properties close to subway stations or light rail lines typically experience a premium in market value due to the improved accessibility they offer (Berawi *et al.*, 2020; Zhou *et al.*, 2022). A study in New York City showed that properties located within a 10-minute walk from a subway station saw a price increase of up to 20% compared to those further away (Madden, 2014). Similarly, a study in London showed that properties near stations in the London underground system experienced price increases of up to 10-12% (Gibbons & Machin, 2005). Proximity to transportation hubs is important, but the quality and efficiency of the transportation system also matter. Newer, more efficient systems provide more benefits to property owners than older or slower systems. Gibbons and Machin (2005) showed that newer, high-speed rail links to central urban areas had a much greater positive impact on property prices than older, less efficient transport links. While the positive capitalization effect is robust across developed markets, the premium appears to vary with city density and income levels; findings from high-income, polycentric cities may overestimate benefits in Addis Ababa where public transport quality remains variable.

2.1.6. Proximity to Educational Amenities

Empirical studies have demonstrated that properties located within the catchment areas of good schools are more expensive compared to properties in areas without such amenities. (Black, 1999) found that school quality is one of the most important factors affecting residential property prices in the United States. Zabel and Mulley (2012) also confirmed that the value of homes increases by 2-4% for every additional mile closer a property is to a high-performing school. (Black, 1999) suggests that U.S. homes within a highly-rated school district can see a premium of up to 10%, as the quality of education is a key consideration for many homebuyers. The study in Oshkosh, Wisconsin, US found that houses closer to elementary, middle or high schools have higher price as compared to houses far away from schools (Huang, 2018). Wen *et al.* (2014)

from Hangzhou, China also reported that educational facilities have a positive capitalization effect on housing price; presence of the educational facility within the catchment area of the house increase housing price increases by 2.737%. There are also studies that showed real estate's very close to schools showed lower price. The study in Denver city showed that homes 1,000 feet from a school have a higher price than homes less than 500 feet (Metz, 2015). The mixed findings (positive capitalization versus slight negative effects very close to schools) illustrate that both distance and school quality matter, yet most studies use catchment-area proxies rather than direct quality metrics, a limitation that future Ethiopian research should address.

2.1.7. Proximity to Healthcare Amenities

Residential properties in close proximity to large hospitals experienced price premiums, especially in high-density areas, because of the added healthcare security and convenience. Gu *et al.* (2024) in Shanghai, China demonstrated that the housing price is higher around hospitals. Hospitals available within a short walking distance increases the property prices. That study also reported that houses available within a walking distance of under 10 minutes to tertiary showed a lower price. Liu and Wang (2021) also indicated that residential properties in close proximity to large hospitals experienced price premiums, especially in high-density areas, because of the added healthcare security and convenience. The non-linear distance effect (premium for moderate proximity but discount for immediate adjacency due to noise and traffic) underscores the importance of context-specific thresholds when applying these models in Addis Ababa.

2.1.8. Proximity to Recreational and Leisure Amenities

Properties near parks or recreational spaces enjoy higher values. Studies in Chicago and New York showed that homes near parks experience property price premiums of between 5% and 15%, depending on the park's size and accessibility (Tyrväinen, 2001). Similarly, the availability of recreational amenities and green space has been linked to significant increases in property values, especially in high-density residential areas (He, 2018). Feng and Humphreys (2018) in Columbus reported that presence of sports facilities have a significant, positive, effect on surrounding residential housing values. Keeler *et al.* (2021) also found that opening of new sport facilities increase the housing price in Downtown Los Angeles, California.

2.1.9. Proximity to Commercial and Retail Amenities

Properties located near major retail developments or commercial zones typically command higher prices due to the increased convenience and lifestyle options available to residents. A study by Barr (2015) found that homes located near large shopping malls saw price increases of 8_10%, as these amenities provide both convenience and a perceived higher standard of living. The study also showed that properties close to large retail developments or major shopping streets often see a price increase due to the convenience they offer to residents.

2.1.10. Proximity to Environmental and Sustainable Amenities

Properties with access to green spaces or those that include sustainable design features (e.g., energy-efficient homes) tend to have higher market values. According to a study by Fuerst & McAllister (2011), properties with energy-efficient features or located in neighborhoods with good environmental quality command price premiums, particularly as consumers increasingly prioritize sustainability. Similarly, properties near green spaces and natural areas, such as forests or water bodies, are typically valued higher due to their positive impact on quality of life and aesthetics (Berman *et al.*, 2012).

2.1.11. Proximity to Green Spaces and Parks

Studies consistently reported that availability of green space and parks increases the value of the real estate property. Lin *et al.* (2013) reported that park facilities for passive recreation, with the exception of urban gardens, have positive impacts on property values. Availability and accessibility of skate parks and children's play areas, decreases the house value. That study also stressed that property values decrease as the distance from parks increase. Chen *et al.* (2022) also conducted a comprehensive review on the impact of urban parks and green spaces on residence prices. The study showed that although the studies used different methodological approach and categorize the size and quality of the parks and green spaces in different ways, most of the studies reported that physical proximity of the parks and green spaces increase the house price.

2.1.12. Combined Effects of Amenities

Clapp & Chan (2013) demonstrated that properties located in neighborhoods with several complementary amenities experience substantial price increases. In some cities, these combined amenities result in a "halo effect," where properties close to highly desirable locations such as

cultural or commercial centers are more highly priced. Overall, while the international literature shows consistent positive capitalization of amenities, the magnitude and relative importance vary by income level, urban form, and methodological approach. These differences highlight the need for context-specific evidence in rapidly urbanizing settings such as Addis Ababa.

2.2. Empirical Evidence from the Ethiopian Context

Although the bulk of evidence is international, a small but growing body of Ethiopian research provides important local insights. Assefa (2017) found that location, physical characteristics of property, and the accessibility of properties are the major direct influencing factors for the real estate price in Addis Ababa city administration. On the other hand, Mekuria *et al.* (2024) ascribed that plot size, floor area, number of rooms, age of the house, finishing material, direction of the house, distance of the property from the main road, and involvement of brokers in the transaction process significantly contribute to the residential real estate prices in Bahir Dar city. These studies underscore the critical role of general accessibility and location; however, they treat accessibility primarily as distance to the main road rather than as a comprehensive bundle of neighborhood amenities (security, schools, healthcare, parks, utilities, etc.). Consequently, they do not fully address the multi-dimensional influence of the full range of amenities examined in the present study, leaving a clear empirical gap that the current research seeks to fill.

Proximity to Utilities: Basic utilities such as water, electricity, gas, and waste disposal systems are essential for the proper functioning of any property (R. Gao *et al.*, 2024). Although rarely isolated in hedonic pricing models, reliable utility access is implicitly embedded in many of the essential-amenity studies cited above and is hypothesized in the present conceptual framework to exert a foundational positive effect on property values, especially in contexts of intermittent service delivery such as Addis Ababa.

Empirical findings from the Ethiopian context (summary table)

Study (author, year)	Location	Data / Method	Key findings	Notes / gap
Assefa (2017)	Addis Ababa	Empirical analysis	Location, physical property characteristics, and accessibility	Focuses on general accessibility rather

Study (author, year)	Location	Data / Method	Key findings	Notes / gap
		(city data)	are major determinants of real estate price	than a full set of neighborhood amenities
Mekuria <i>et al.</i> (2024)	Bahir Dar	Hedonic / regression analysis	Plot size, floor area, number of rooms, age, finishing, orientation, distance from main road, and broker involvement significantly affect residential prices	Emphasizes internal attributes and distance-to-road as accessibility proxy

2.2.1. Other factors that influence Real Estate Value

2.2.1.1. Income Levels and Socioeconomic Factors

Socio-economic status of the customers has significant impact on the selection of the real estate. Black (1999) suggests that wealthier households are more willing to pay a premium for amenities such as high-quality education and proximity to exclusive recreational facilities, while lower-income households place more value on essential services like affordable public transportation and healthcare. Therefore, income disparities shape how different segments of the population value amenities.

2.2.1.2. Location and Accessibility

Gibbons and Machin (2005) demonstrated that accessibility is a key moderating factor. In some cases, properties in central locations benefit more from public transportation access than those in more suburban or rural areas. In dense urban environments, the availability of amenities and their integration with transportation networks tends to have a more significant impact on property values. Scholars also stressed that residential home pricing is affected due to different localities; for instance urban regions command higher prices, while comparable properties in rural areas command lower prices (Pagliara *et al.*, 2010).

2.3. Conceptual Framework

The conceptual framework was developed based on the literature review. This study examines the relationship between amenities and real estate values in Addis Ababa. The conceptual framework suggests that a variety of amenities such as basic amenities (water supply and utilities, security services, and road infrastructure and accessibility), physical amenities (proximity to green spaces, transportation access), community amenities (schools and healthcare), and lifestyle and luxury amenities (gym and recreational centers) have significant contribution on property value. In this study, we hypothesized that properties that are closer to desirable amenities and have better access to infrastructure and command higher prices, and that the quality and availability of amenities will have an impact on property values, with higher-quality amenities being linked to higher prices. In addition, background characteristics of the buyers such as age, gender, educational status, income and occupation have significant influence on property value and may moderate the strength of the amenity–price relationship. Figure 1 below presents the relationship between the dependent and independent variables. In the context of Addis Ababa, this conceptual framework showed the analysis of the study. It showed how these independent factors affect the dependent variable, real estate value.

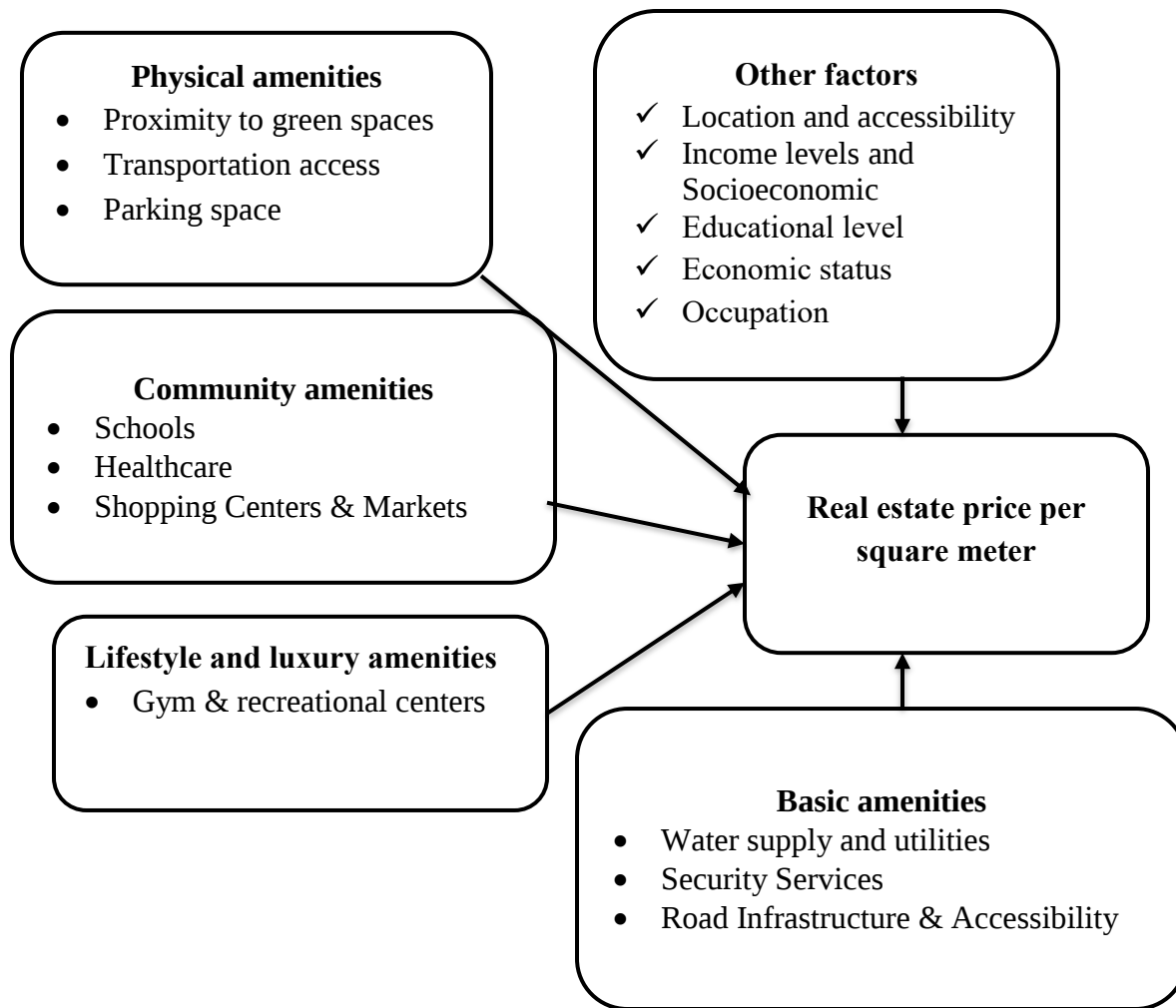


Figure 1: Conceptual framework for the study

Source: adapted by reviewing previous literature

3. MATERIALS AND METHODS

This section describes the methodological approaches used in this study. It includes sub-headings such as description of the study setting, research design, sample size and sampling procedure, data collection methods, study variables, variable measurements, and statistical analysis for both quantitative and qualitative components. Each subsection is presented in detail with appropriate justification and supporting citations to ensure the validity and credibility of the findings.

3.1. Description of the study setting

This study was conducted in selected sub-cities of Addis Ababa (Fig. 1), the capital city of Ethiopia, located in the central highlands at an altitude of approximately 2,355 meters above sea level. Addis Ababa lies between 8°46'00" and 9°11'30" N latitude and 38°35'30" and 38°57'30" E longitude. It covers an area of approximately 519.482 km² and is the highest capital city in Africa. It serves as the economic, cultural, and political center of Ethiopia.

Administratively, Addis Ababa is divided into 11 sub-cities (kifle ketemas) and 116 woredas and is governed by the Addis Ababa City Administration headed by a mayor. The city currently accounts for a significant proportion of the national GDP and is the center of major economic activities and urbanization.

Rapid urbanization and population growth have created a persistent mismatch between housing supply and demand, leading to increased demand for residential and commercial properties. According to the Ethiopian Statistical Service (ESS, 2024), the population of Addis Ababa has surpassed five million, with an annual growth rate of approximately 4.1% driven mainly by rural-urban migration.

Since the late 1990s, the real estate sector has expanded significantly, offering residential, commercial, and mixed-use developments. Property values in the city are strongly influenced by access to infrastructure and urban amenities such as roads, schools, healthcare facilities, markets, transport systems, and green spaces.

Addis Ababa has implemented multiple master plans, including those of 1936 (Le Corbusier), 1938 (Guidi and Valle), British-based plans (1956–1966), and later urban development frameworks in 1978, 1986, 2006, and 2017 (UN-Habitat, 2017). Recently, major urban transformation initiatives such as the Corridor Development Program (Corridor LiTam) have significantly improved infrastructure, connectivity, and urban aesthetics, further increasing real estate demand.

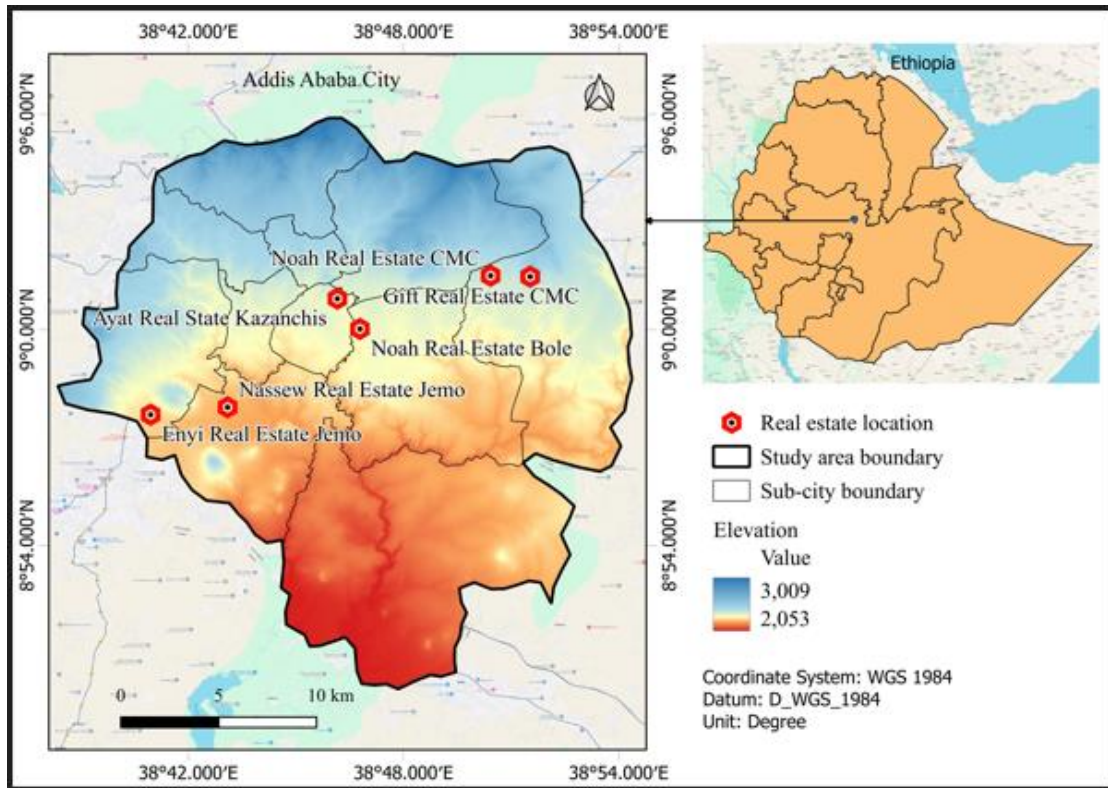


Figure 2: Location Map of the study area

3.2. Research Study Design

A research design is a framework of methods and procedures used to collect and analyze data on variables related to a research problem (Ranganathan & Aggarwal, 2018). In this study, a convergent mixed-methods design was employed. The quantitative component used an analytical cross-sectional design, while the qualitative component applied a phenomenological approach.

The convergent mixed-methods design was selected because it allows simultaneous collection and independent analysis of quantitative and qualitative data, followed by integration of results

(Katz-Buonincontro, 2024). This design was preferred over single-method approaches because real estate valuation is influenced by both measurable factors (prices, amenities) and subjective experiences (developer perspectives and buyer perceptions).

The quantitative component examined the relationship between real estate prices and urban amenities. The qualitative component explored developers' lived experiences regarding how amenities influence property development and pricing.

3.3. Population of the Study

3.3.1. Source population

The source population for the quantitative study included all real estate property buyers in selected sub-cities of Addis Ababa. For the qualitative study, the source population included individuals directly involved in real estate development within selected companies.

3.3.2. Study population

The study population for the quantitative component consisted of property buyers in selected sub-cities (Bole, CMC, Jemo, and Kazanchis). For the qualitative component, representatives of selected real estate companies (Nassew, Noah, Ayat, Gift, and Enyi) were included.

3.3.3. Sampling unit and sampling frame

The sampling unit for the quantitative study was individual property buyers. For the qualitative study, the sampling unit was key informants from real estate companies. Two sampling frames were used:

The Addis Ababa Trade Bureau (2025) registry of 996 developers in selected sub-cities and Client delivery records (2018–2025) from selected real estate companies. These records provided verified lists of 2,312 property buyers, ensuring reliable sampling and reducing selection bias.

The study was able to identify the final 205 respondents by performing a precise proportional allocation and a simple random sampling using these official delivery records as the frame. This

ensured that each chosen unit was a verified property owner with firsthand experience of the amenities offered.

3.3.4. Study unit

Study unit is defined as the units of analysis where the data are actually collected (Babbie, 2020). In this study individual was the study unit both for the quantitative and qualitative parts. Individual buyers/customers for the quantitative and representative of individual real estate developers for the qualitative part were the study units for the quantitative and qualitative part, respectively.

3.3.5. Eligibility Criteria

All individuals who bought houses from selected real estate companies were included. Key informants from real estate developers were also included. Individuals not available after three consecutive visits were excluded.

3.3.6. Sample size determination

The sample size was determined following the Yamane's formula (Yamane, 1973), and a total of 205 sample customers were drawn as shown in the calculation below. Based on the information obtained from the real estate owners 2312 residential real estate properties have delivered in the selected real estate companies with in selected location in the study area (i.e. the detail is presented under the sampling technique below). Considering the commonly used level of precision and cost of data collection 7% was used in this study.

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = required sample size

N= total population size

e = level of precision (marginal error) in this study at 7%

$$n = \frac{2312}{1 + 2312(0.07)^2} = \sim 187$$

After adding a 10% non-response rate, the final sample size became **205 respondents**.

3.3.7. Sampling technique

A multi-stage sampling design was used in the study to look into how amenities affected Addis Ababa's real estate market values. In the first stage, four target sub-cities Bole, Kirkos, Nefas Silk-Lafto, and Lemi Kura were chosen from the eleven sub-cities using a Simple Random Sampling (SRS) technique .The Addis Ababa Trade Bureau (2025) reports that there are 996 registered developers in these four sub-cities , divided as follows: Bole (432), Kirkos (321), Nefas Silk-Lafto (123), and Lemi Kura (120). Five developers (Nassew, Noah, Ayat, Gift, and Enyi) were chosen based on their experience, professional background, availability of the data, willingness of the companies and involvement in Addis Ababa's real estate market in the second stage using a Purposive Sampling technique from the 996 active developers within the four selected sub-cities. Then, the selected real estate's last seven years house delivery to their client record was identified. According to their recent record Nassew delivered 305, *Noah delivered* 823 houses, Gift delivered 361, Ayat delivered 406, and Enyi delivered 417 houses at the selected locations. Then in the second step, the sample size was proportionately allocated based on the recent house delivery report; and then individual buyers were selected using simple random sampling technique (Fig. 2).

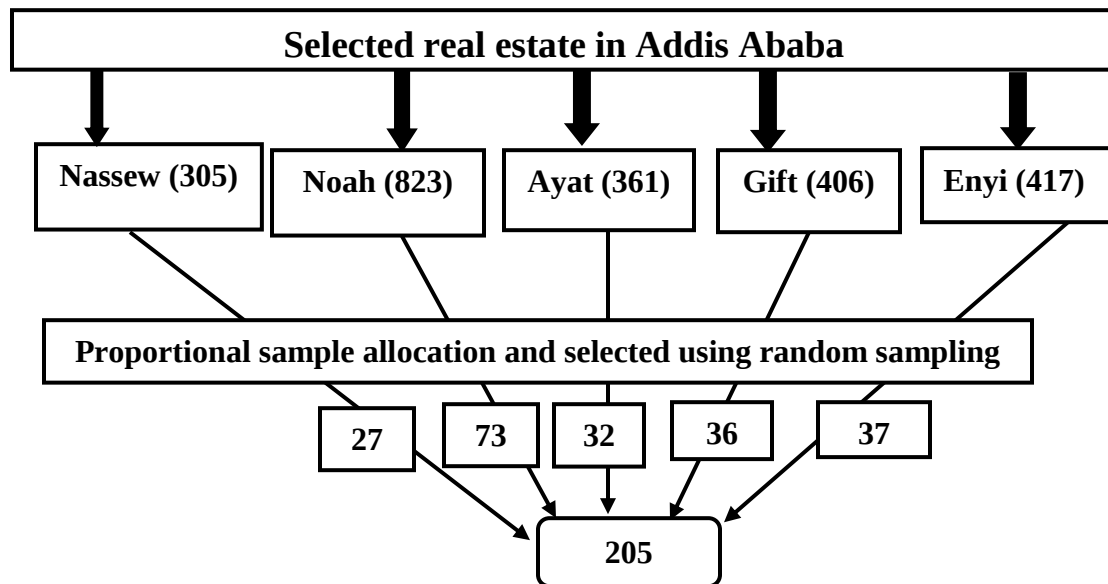


Figure 3: Schematic presentation of the sampling procedure

The study employed a proportional sample allocation from each selected real estate to ensure that the samples were distributed according to their market share. The proportional sample for each

real estate was calculated by taking their specific contribution to the total property delivery (2,312) and applying it to the total sample size (205). For example, for Noah real estate the number of samples required is calculated by multiplying the total sample size (205) by the ratio of Noah's delivered houses (823) to the total population (2,312). This is calculated as: $(823 \div 2,312) \times 205 = 72.97$. Since the number of samples must be a whole number, it is rounded to 73. The same calculation was applied for the remaining real estates as shown in shown in the schematic presentation in Figure 3.

3.4. Data collection methods

3.4.1. Data collection tool

The data were collected from buyers and developers using structured interviewer administered questionnaire (survey) and key informant interview guide, respectively. The tool comprises background variables including age, gender, income, occupation, experience of purchasing from real estate, and source of financing. The importance of amenities including security services, parking space, proximity to schools, access to public transport, shopping centers and markets, healthcare facilities, green spaces and parks, gym and recreational centers, road infrastructure and accessibility, and water supply and utilities in purchasing decision was included. The tool also comprises amenity preferences, satisfaction, and property values. Key informant interview guide was prepared for the qualitative part. In addition, existing records and reports of real estate transaction data, property price indices, urban development plans, and demographic statistics from government offices and real estate companies were used as secondary data sources.

3.4.2. Data collection procedure

The tool for the quantitative part was organized using Kobo toolbox for electronic data collection. The tool was pretested on 5% of the sample before applied to the actual data collection. Three data collectors and a supervisor were hired for the data collection and they received adequate training about the purpose and objectives of the study, and the data collection using Kobo toolbox.

The data for the qualitative part was collected using a semi-structured interview guide and collected using tab recorder and notes book. The reliable secondary data was collected by

analysis of government reports, and real estate company publications to supplement primary data.

3.5. Study variables

The real estate property price per square meter was the outcome/dependent variable (continuous variable) for this study. In addition, the independent variables of the study included Availability of amenities: security services, parking space, proximity to schools, access to public transport, shopping centers and markets, healthcare facilities, green spaces and parks, gym and recreational centers, road infrastructure and accessibility, and water supply and utilities.

3.5.1. Operational Definitions

Real estate price: this is the market value of the property, which is the dependent variable of this study is a continuous variable, operationalized as the price per square meter (ETB/m²) reported by the buyers at the time of transaction (Mekuria *et al.*, 2024).

Amenities: are the good-to-have features in a real estate that add additional comfort and enjoyment, which in turn increases the marketability, value, and investment potential (Conte, 2023). In this study availability and proximity of to the real estate was assessed. Amenities such as security services, parking space, nearby schools, access to public transport, shopping centers and markets, healthcare facilities, green spaces and parks, gym and recreational centers, road infrastructure and accessibility, and water supply and utilities were assessed using a yes/no questions. Proximity was therefore operationalized as a binary indicator (yes = the amenity is perceived by the buyer as being within reasonable walking or accessible distance / no = it is not), which is a standard and practical approach in large-scale survey research when exact metric distances are not feasible to collect from respondents. This binary coding directly supports the evaluation of proximity effects in the regression models by estimating the price premium associated with the presence versus absence of nearby amenities.

3.6. Data quality control

To ensure data quality, the data collection team received both theoretical and practical training about the purpose of the study and the data collection procedure. Furthermore, the data collection tool was pretested, and amendments were made as needed. Furthermore, the supervisors monitored the entire data collection process regularly throughout the study period. The

investigators double-checked the information's consistency once the data collectors send the data. Then, complete forms were downloaded as an excel file and imported to SPSS and Stata version 17 for analysis.

3.7. Methods of Data Analysis

3.7.1. Quantitative Data Analysis

Once the data collection is complete, the final data set was downloaded as an excel file from the KOBO toolbox and imported into Stata version 17 for analysis. Data cleaning, coding, and recoding were done before the actual analysis. Descriptive statistics: Frequency with percentage and means with standard deviation (SD) were used to present categorical and continuous variables, respectively. Inferential statistics: One-way Analysis of Variance (ANOVA) was used to identify differences in property value among groups with different independent variables. Moreover, simple and multiple linear regression were computed to assess how various types of amenities including schools, parks, healthcare influence on property prices while controlling for other factors such as location and property characteristics. Multiple linear regression was specifically chosen as the most appropriate tool for this study because the dependent variable (real estate price per square meter) is continuous. There are multiple interrelated independent variables (amenities), and the technique allows simultaneous estimation of the marginal contribution of each amenity while controlling for confounding factors such as location and buyer characteristics. The simple linear regression model was computed with the following equation 1.

$$Y = \beta_0 + \beta_1 X + \varepsilon \quad (1)$$

Where **Y** is the dependent variable measured in the average property price in meter square; **X** is each independent variables or the perceived distance between the real estate property and each amenities in the context of this study; **β_0** is the intercept; expected value of Y where X is zero; **β_1** is the slope coefficient; change in unit price in every (Y) change in the independent variables (X); and **ε** is the error term that represent unexplained variations.

Furthermore, the multiple linear regression was computed following equation 2.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon \quad (2)$$

Where **Y** is the average property price in meter square; **X1 to Xk** are the independent variables, **β0** = the intercept; **β1 to βk** are partial regression coefficients, and **ε** is the random error. The final regression model was presented in equation 3 below.

$$\begin{aligned} Y^{\wedge} = & 34100.94 + 7715.71SS + 2135.67PS + 5012.78NS + 5015.36APT) - \\ & 870.08SCM + 4290.13HF + 2518.55GSP + 2512.88GRC + 3073.34RIA + \\ & 2805.71WSU \end{aligned} \quad (3)$$

Where, **Y[^]** = Predicted property price, and the predictors including **SS** = security service, **PS** = parking space, **NS** = nearby school, **APT** = access to public transport, **SCM** = shopping centers and markets, **HF**, health facilities, **GSP** = green space and parks, **GRC** = gym and recreational centers, **RIA** = road infrastructure and accessibility, and **WSU** = water supply utilities

Finally, the linear regression assumptions: multicollinearity, linearity of variables, normality, and homoscedasticity were tested using the variance inflation factor (VIF), scatterplots, histogram, and the Cook–Weisberg test, respectively. Variables with a p-value of ≤ 0.25 in unadjusted analysis were included in the final model. Statistical significance was declared at a P-value of < 0.05 .

3.7.2. Qualitative Data Analysis

The key in-depth interviews collected from the real estate developers were *recorded exactly by* the investigators and research assistance. Then the data were analyzed using thematic analysis approach. The narratives were re-read and the texts were grouped into sections. Then, the sections were labeled with a code-word based on their meanings. Codes with similar meaning were further merged to subthemes, and the subthemes with common meaning were grouped into themes. An independent coder was used to ensure trustworthiness. Credibility, dependability, *confirmability*, and credibility of the data were ensured through audiotaping the interviews, more experienced coder, using participants' own words to describe phenomena, and through member checking, respectively. Finally, the findings were triangulated with the quantitative findings to ensure the validity and consistency of results across different data sources and methods.

3.8. Ethical Consideration

Ethical approval for this study was obtained from the department of Urban Land and Property Valuation, Addis Ababa University. Moreover, permission was obtained from each real estate developers before the beginning of the study. The rights of the participants for this study were protected and respected; they received a clear information about the purpose of the study, the right to participate voluntarily, the right to ask questions, the right to stop responding at any time during the interview, and the right to choose not to respond to any questions. Furthermore, the information received from the respondents was kept confidential and was not shared to any third party.

4. RESULTS

This chapter presents the findings of the study based on descriptive and inferential statistical analyses. The results are organized into the following sub-sections: background characteristics of participants, experience of real estate purchase, and importance of amenities, satisfaction with amenities, property value trends, and developer perspectives. The influence of amenities on real estate price was analyzed using simple and multiple linear regression. Diagnostic tests were conducted to ensure model validity. Results are presented using tables, figures, and narrative explanations.

4.1. Background characteristics of participants

A total of 205 real estate buyers participated in this study. The mean age of respondents was approximately 40 years ($SD \pm 7.53$). Nearly half of the participants were aged between 35 and 44 years, while the remaining were distributed across younger and older age groups.

Male respondents constituted the majority of the sample (over two-thirds), while females accounted for about one-third. The educational profile shows that most respondents were highly educated, with the majority holding a bachelor's degree and a substantial proportion holding a master's degree.

Income levels were widely distributed, ranging from low-income to high-income groups, indicating participation from diverse socioeconomic backgrounds. In terms of occupation, private employees formed the largest group, followed by business owners and government employees (Table 1).

Table 1: Description of the sampled participants using descriptive statistics

Variables	Frequency	Percentage
Age in years		
25-34	52	25.37
35-44	94	45.85
≥ 45	59	28.78
Total	205	100.00
Gender		
Male	144	70.24
Female	61	29.76
Total	205	100.00
Educational Level		
Diploma	7	3.41
Bsc	124	60.49
Msc	68	33.17
PhD	6	2.93
Total	205	100.00
Monthly Household/Business Income (ETB)		
<10,000	14	6.83
10,001-30,000	64	31.22

Monthly Household/Business Income (ETB)		
30,001-50,000	65	31.71
50,001-100,000	35	17.07
>100,000	27	13.17
Total	205	100.00
Occupation		
Government employee	33	16.10
Private employee	97	47.32
Business owner	52	25.37
Real estate developer	14	6.83
Other	9	4.39
Total	205	100.00

4.2. Experience of real estate purchase

According to this investigation, all of the sampled residents purchased real estate in Addis Ababa. The majority, 173 (84.39%), of the respondents purchased an apartment, 23 (11.22%) bought commercial property, and the remaining 9 (4.39%) purchased for others. Over two-thirds, 140 (68.29%), of the sampled residents' primary purpose of purchase was for residential. On the other hand, 40 (19.51%) and 23 (11.22%) of the respondents purchase for investment and rent, respectively. Regarding financial sources, 107 (52.20%) of the residents said the financial source was from personal savings, 35 (17.07%) from bank loans, 38 (18.54%) from family support, and the rest, 25 (12.20%), from other sources (**See Table 2**).

Table 2: Description of the purchasing experience of the sampled residents.

Variables	Frequency	Percent
Have you purchased real estate in Addis Ababa?		
Yes	205	100.00
Type of Property Purchased		
Apartment	173	84.39
Commercial property	23	11.22
Others	9	4.39
Total	205	100.00
What was the primary purpose of your purchase?		
Residential	140	68.29
Investment	40	19.51
Rental	23	11.22
Other	2	0.98
Total	205	100.00
What was the source of financing?		
Personal savings	107	52.20
Bank loan	35	17.07
Family support	38	18.54
Other	25	12.20
Total	205	100.00

According to this study, the sampled residents purchase from different real estate at different locations, including Bole, CMC, Jemo, and Kazanchis. Accordingly, 40 (19.51%) were purchased in Bole, 69 (33.66%) from CMC, 64 (31.22%) from Jemo, and the remaining 32 (15.61%) bought from Kazanchis (see Fig. 3).

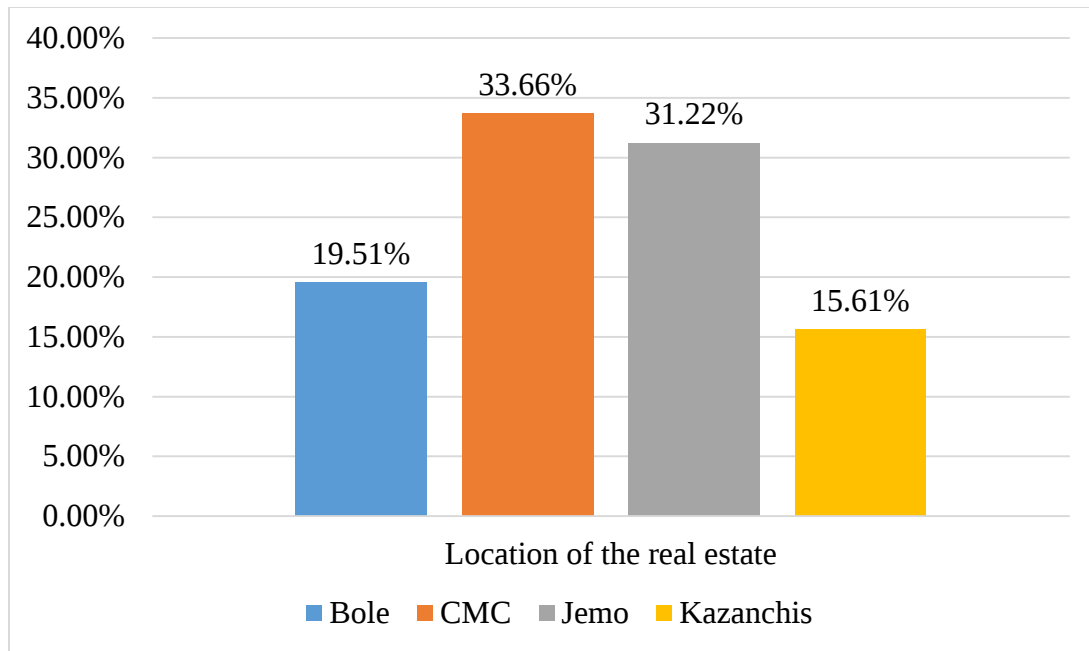


Figure 4: Description of the location of the real estate purchased by samples

Sources: Own survey

4.3. Importance of amenities on property value

The participants view about the importance of amenities on property value was asked in a five-point Likert scale questions and presented in table 3. Among the sample respondents, three-fifth, 125 (60.98%) reported that availability of security services around the real estate is very important for property value. Parking space around the real estate is another key amenity valued by customers as 88 (42.93%) of the respondents responded that parking space is very important to increase the real estate value. Of the participants, 60 (29.27%), and 86 (41.95%) reported that proximity to schools is important and very important, respectively, to improve the real estate value. Nearly half, 94 (45.85%) of the respondents reported that access to public transport to the real estate is very important to increase the property value. Likewise, 101 (49.27%) reported that access to shopping centers and markets around the real estate is very important and increases the property value. Moreover, 100 (48.78%), 67 (32.68%), and 49 (24.26%) of the sampled respondents mentioned that availability of healthcare facilities, green spaces and parks, gym and recreational centers around the real estate is very important for property value, respectively. Furthermore, 142 (69.27%), and 154 (75.12%) reported that road infrastructure and accessibility,

and availability of water supply and utilities around the real estate is very important and increase the value of the real estate, respectively (**Table 3**).

Table 3: Descriptions of participants view on the importance of amenities on property value.

Variable	Not important N, (%)	Somewhat important N, (%)	Neutral (%)	N,	Important N, (%)	Very important N, (%)
Security services	9 (4.39)	2 (0.98)	28 (13.66)		41 (20.00)	125 (60.98)
Parking space	11 (5.37)	15 (7.32)	40 (19.51)		51 (24.88)	88 (42.93)
Proximity to Schools	14 (6.83)	1 (0.49)	44 (21.46)		60 (29.27)	86 (41.95)
Access to public transport	10 (4.88)	14 (6.83)	30 (14.63)		57 (27.80)	94 (45.85)
Shopping centers & markets	15 (7.32)	7 (3.41)	24 (11.71)		58 (28.29)	101 (49.27)
Healthcare facilities	10 (4.88)	6 (2.93)	38 (18.54)		51 (24.88)	100 (48.78)
Green spaces & parks	11 (5.37)	13 (6.34)	56 (27.32)		58 (28.29)	67 (32.68)
Gym & recreational centers	16 (7.92)	29 (14.36)	47 (23.27)		61 (30.20)	49 (24.26)
Road infrastructure & accessibility	16 (7.80)	5 (2.44)	13 (6.34)		29 (14.15)	142 (69.27)
Water supply & utilities	11 (5.37)	7 (3.41)	4 (1.95)		29 (14.15)	154 (75.12)

4.4. Property value change overtime

Over half of the participants, 105 (51.22%), reported that the value of the property was increased after they purchased. Participants also reported the most contributing factors for the increment as improved infrastructure (43, 20.98%), proximity to new amenities (43, 20.98%), increased demand in the area (47, 22.93%), generated economic growth (47, 22.93%), and government policies 25 (12.20%). Among the sampled respondents, 96 (46.83%) reported as they are willing to pay more for a property with enhanced amenities. In addition, 118 (57.56%) of the participants think that amenities contribute to a 10-20% price increment, and five (2.44%) think that amenities contribute for over 30% price increment on property value of the real estate. Furthermore, most, 170 (82.93%), of the participants considered buying another real estate property in Addis Ababa. However, in their future purchase they prioritize the following additional amenities: smart home features (36, 17.56%), high-speed internet (14, 6.83%), community space (55, 26.83%), and childcare facilities (48, 23.41%, sustainable energy source (43, 20.98%), and other (9, 4.39%) (Table 4).

Table 4: Description of real estate property value change overtime.

Variable	Frequency	Percent
Have you experienced an increase in property value since purchase?		
Yes	105	51.22
No	100	48.78
Total	205	100.00
What do you believe contributed most to the increase property value?		
Improved infrastructure	43	20.98
Proximity to new Amenities	43	20.98
Demand in the area	47	22.93
Generate economic growth	47	22.93

Variable	Frequency	Percent
Government policies	25	12.20
Total	205	100.00
Would you be willing to pay more for a property with enhanced amenities?		
Yes	96	46.83
No	109	53.17
Total	205	100.00
By what percentage do you think amenities contribute to price		
<10%	26	12.68
10-20%	118	57.56
21-30%	56	27.32
>30%	5	2.44
Total	205	100.00
Would you consider buying another real estate property in Addis Ababa?		
Yes	170	82.93
No	30	14.63
Not sure	5	2.44
Total	205	100.00
What additional amenities would you prioritize in a future purchase?		
Smart home features	36	17.56

Variable	Frequency	Percent
High speed internet	14	6.83
Community space	55	26.83
Childcare facilities	48	23.41
Sustainable energy source	43	20.98
Other	9	4.39
Total	205	100.00

4.5. Satisfaction with amenities around the real estate

Sampled respondent's satisfaction with the amenities around the real estate property was asked in a five-point Likert scale question (1 very dissatisfied to 5 very satisfied and presented in table 5. Among the sample respondents, 74 (36.10%) and 83 (40.49%) were very satisfied and satisfied with the availability of security services around the real estate. Among the participants, 58 (28.29%) and 64 (31.22%) were satisfied and very satisfied with the parking space. Of the participants, 56 (27.32%) and 66 (32.20%) were satisfied and very satisfied by the nearby schools in relation to the real estate.

Over a quarter, 57 (27.80%), of the respondents were very satisfied with the availability of public transport to the real estate. Similarly, over one-third 74 (36.10%) were very satisfied with the availability of shopping centers and markets around the real estate. In addition, 69 (33.66%), 40 (19.51%), and 37 (18.05%) of the sampled respondents were satisfied with the availability of healthcare facilities, green spaces and parks, gym and recreational centers around the real estate, respectively. Moreover, 69 (33.66%), and 73 (35.61%) of the sampled respondents were satisfied with the road infrastructure and accessibility, and availability of water supply and utilities around the real estate, respectively (**Table 5**).

Table 5: Respondents satisfaction with the amenities around the real estate (n = 205)

Variable	Very dissatisfied N, (%)	Dissatisfied N, (%)	Neutral N, (%)	Satisfied N, (%)	Very satisfied (%)
Security services	13 (6.34)	2 (0.98)	33 (16.10)	83 (40.49)	74 (36.10)
Parking space	21 (10.24)	8 (3.90)	54 (26.34)	58 (28.29)	64 (31.22)
Nearby schools	11 (5.37)	14 (6.83)	58 (28.29)	56 (27.32)	66 (32.20)
Access to public transport	11 (5.37)	30 (14.63)	38 (18.54)	69 (33.66)	57 (27.80)
Shopping centers & markets	16 (7.80)	15 (7.32)	42 (20.49)	58 (28.29)	74 (36.10)
Healthcare facilities	16 (7.80)	25 (12.20)	23 (11.22)	72 (35.12)	69 (33.66)
Green spaces & parks	22 (10.73)	37 (18.05)	45 (21.95)	61 (29.76)	40 (19.51)
Gym & recreational centers	22 (10.73)	37 (18.05)	40 (19.51)	69 (33.66)	37 (18.05)
Road infrastructure & accessibility	11 (5.37)	20 (9.76)	37 (18.05)	68 (33.17)	69 (33.66)
Water supply & utilities	15 (7.32)	31 (15.12)	26 (12.68)	60 (29.27)	73 (35.61)

Figure 3 presents the description of respondents' satisfaction with the amenities around the real estate. The first three categories (very dissatisfied, dissatisfied and neutral) were categorized in one group and labeled as not satisfied and the next two categories (satisfied and very satisfied) as

the other category and labeled as satisfied. The graph presented respondents satisfaction in descending order as security services (76.59%), healthcare facilities (68.78%), and road infrastructure and acceptability (66.83%) took top priorities for customers' satisfaction (**Figure 3**).

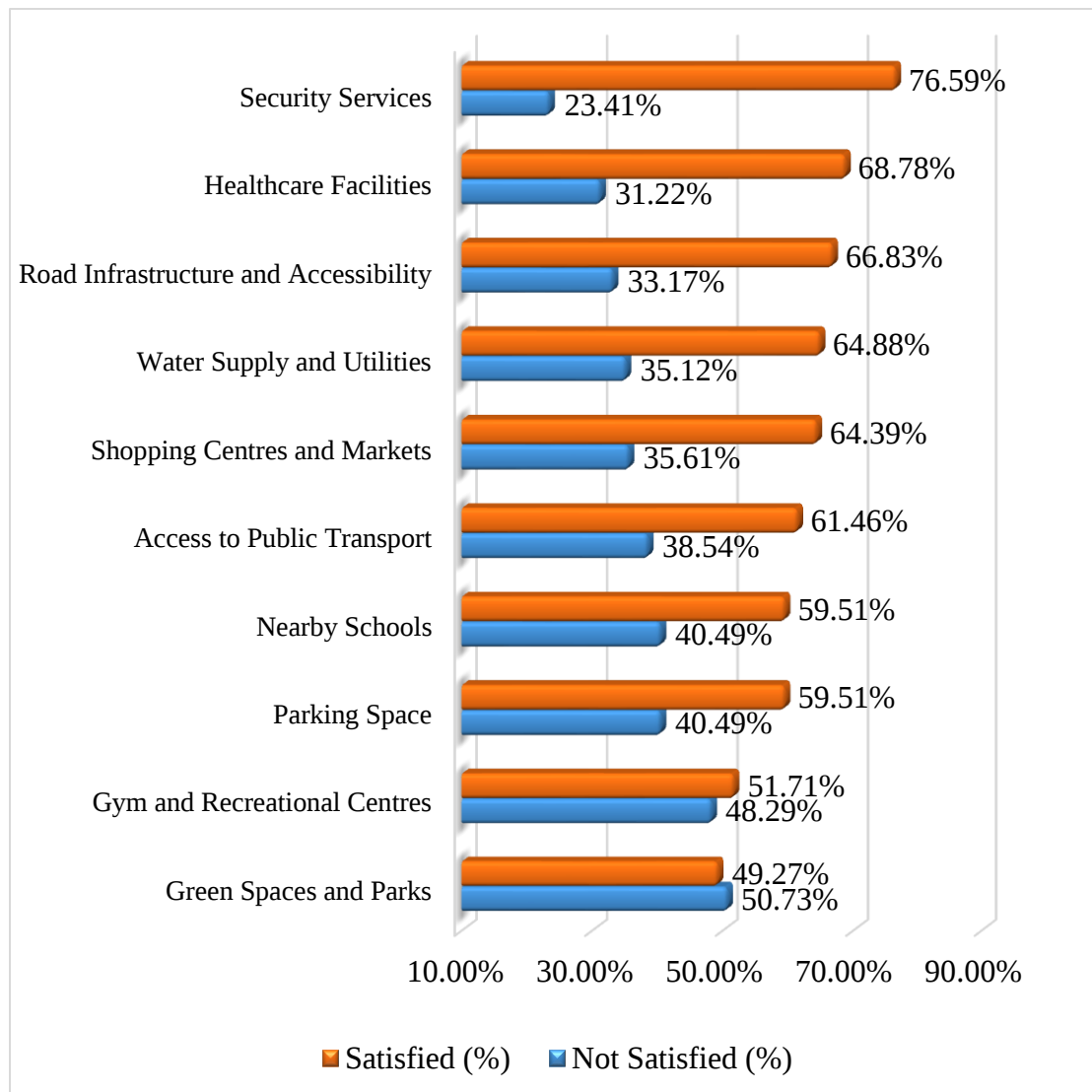


Figure 5: Respondents satisfaction with the amenities around the real estate

4.6. Status of property value

According to this study, the mean price of the real estate per square meter was 83,009.76 birr with a standard deviation (SD) of 12,835.68 birr. In addition, the median price of the real estate was 80,000 birrs with an (Inter quartile range (IQR) of and 16,000 birr and the minimum and maximum value of 63,000 and 110,000, respectively. In addition, the 1% up to the 99% percentile of the price was presented in **Table 6**.

Table 6: Detail description of the outcome variable (price per square meter)

Real estate price per square meter

Percentiles	Smallest			
1%	63000	63000		
5%	63000	63000		
10%	69000	63000	Observations	205
25% (1 st quartile)	74000	63000	Sum of weight	205
50% [Median]	80000	Mean	83009.76	
	Largest	Std. dev.	12835.68	
75% (3 rd quartile)	90000	110000		
90%	103000	110000	Variance	1.65e+08
95%	105000	110000	Skewness	.4453972
99%	110000	110000	Kurtosis	2.133

4.6.1. Real estate price by location

As presented in table 8, there is significant variation in the mean price of the real estate across different locations. The mean price is highest in Kazanchis, with a mean price of 101,875 ± 4963

birr, followed by Bole ($93,800 \pm 7647$). On the other hand, the lowest price was recorded in Jemo with a mean with SD price of $71,422 \pm 5682$ Ethiopian birr.

In addition to the descriptive statistics, the one-way ANOVA was further computed, and the result, as presented in table 8, showed that there was statistically significant difference in real estate prices among locations $F(3, 201) = 224.68$, $p < 0.001$. Real estate located in Bole and Kazanchis had higher mean prices compared to those in CMC and Jemo. The assumption of equal variances was not violated, Bartlett's $\chi^2(3) = 7.47$, $p = 0.058$. These findings suggest that location was a strong determinant of real estate value in the study area (**Table 7**).

Table 7: Mean difference of real estate value by location and one-way ANOVA

Location of real estate	Summary of Price per Sqm.		
	Mean	SD	Frequency
Bole	93800	7647	40
CMC	78754	6234	69
Jemo	71422	5682	64
Kazanchis	101875	4963	32
Total	83010	12836	205

One-way Analysis of variance (ANOVA)

<i>One-way Analysis of variance (ANOVA)</i>					
Sources	SS ^a	df ^b	MS ^c	F ^d	Prob > F ^e
Between groups	2.5890e+10	3	8.6299e+09	224.68	0.0000
Within groups	7.7203e+09	201	38409557.1		
Total	3.3610e+10	204	164754806		

Bartlett's equal-variances test: $\chi^2(3) = 7.4699$ Prob> $\chi^2 = 0.058$

Footnotes

^aSum of Squares, a measure of total variation in the data that shows how much the individual prices deviate from the overall mean.

^bDegrees of Freedom: the number of independent values that can vary in the analysis. For between groups: number of groups – 1 = 4 – 1 = 3 and for within groups: total observations – number of groups = 205 – 4 = 201.

^cMean Square: The average variation, obtained by dividing SS by its corresponding df.

^dF-statistic: A ratio of between-group variance to within-group variance. A higher F-value indicates greater differences between group means.

^ep-value: The probability of obtaining such an F-value if the null hypothesis (no mean difference) were true.

4.6.2. Real Estate Price by Company

Table 9 presents the mean real estate price by the developer name. The mean price is highest in Ayat, with a mean price of 101875 ± 4963 birr, followed by Noah (88041 ± 9445). On the other hand, the lowest price was recorded in Nassew with a mean and SD price of 69,741 ± 4793 Ethiopian birr.

The ANOVA was further computed, and the result as presented in table 9 showed that there was a statistically significant difference in real estate prices among companies' $F(4, 200) = 114.98$, $p < 0.001$. Real estate located in Ayat and Noah had higher mean prices compared to those in Eniy, Gift, and Nassew. The assumption of equal variances was violated, Bartlett's $\chi^2(4) = 31.7227$, $p < 0.001$. These findings suggest that the Real Estate Developer Company was not a strong determinant of real estate value in the study area; rather, other factors such as amenities around the area could contribute to this variation (**Table 8**).

Table 8: Mean difference of real estate value by company name and ANOVA table

Name of real estate	Summary of Price per Sqm.		
	Mean	SD	Frequency
Ayat	101875	4963	32
Eniy	72649	6019	37

Name of real estate	Summary of Price per Sqm.		
	Mean	SD	Frequency
Gift	76639	5602	36
Nassew	69741	4793	27
Noah	88041	9445	73
Total	83010	12836	205

<i>One-way Analysis of variance (ANOVA)</i>					
Sources	SS ^a	df ^b	MS ^c	F ^d	Prob > F ^e
Between groups	2.3424e+10	4	5.8559e+09	114.98	0.0000
Within groups	1.0186e+10	200	50931499.4		
Total	3.3610e+10	204	164754806		

Bartlett's equal-variances test: chi2(4) = 31.7227 Prob>chi2 = 0.000

4.7. Influence of Amenities on Real Estate Price

4.7.1. Simple linear regression (SLR), unstandardized coefficients

In this study, the influence of amenities on real estate price was assessed using both simple and multiple linear regression (**Table 9 and 10**).

As presented in table 10, the influence of common amenities on the real estate price per square meter was assessed. Although the results were presented in one table, the simple linear regression analysis was carried out independently for each explanatory variable, each amenity, in this case. The simple linear regression analysis demonstrated that the availability of security service around the real estate had a strong positive relationship with the real estate price and increased the prices by approximately 19,000 Ethiopian birr ($\beta = 18987.83$, $P = <0.001$).

There is strong and positive relationship between parking space and the price of the real estate as a unit proximity of the real estate to the parking space increase the price per square meter by ~10,000 birr ($\beta = 9734.794$, $P = <0.001$). Likewise, proximities to amenities such as nearby schools ($\beta = 17315.11$, $P = <0.001$; shopping centers and markets ($\beta = 11628.09$, $P = <0.001$);

healthcare facilities ($\beta = 17096.41$, $P = <0.001$); green spaces parks ($\beta = 12042.05$, $P = <0.001$), gym and recreational centers ($\beta = 9462.205$, $P = <0.001$), road infrastructure & accessibility ($\beta = 18590.91$, $P = <0.001$), and water supply and utilities ($\beta = 19341.4$, $P = <0.001$) had strong and positive relationship with price of the real estate and increase its value about 9462.21 to 19,341.40 Ethiopian birr per square meter (**Table 9**).

Table 9: Simple linear regression that assess the influence of amenities on real estate prices

Amenities	Unstandardi	Std. err.	T	P>t	95% CI	
	zed β coefficient				LL	UL
Security services	18987.83	1692.489	11.22	<0.001	15650.72	22324.94
Constant	49294.78	3087.032	15.97	<0.001	43208.02	55381.54
Parking space	9734.794	1798.021	5.41	<0.001	6189.603	13279.99
Constant	66674.3	3131.937	21.29	<0.001	60499.00	72849.60
Nearby schools	17315.11	1522.198	11.38	<0.001	14313.77	20316.46
Constant	53700.76	2670.6	20.11	<0.001	48435.09	58966.43
Access to public transport	13951.11	1833.772	7.61	<0.001	10335.42	17566.79
Constant	58578.3	3307.74	17.71	<0.001	52056.37	65100.24
Shopping centers and markets	11628.09	1911.919	6.08	<0.001	7858.32	15397.86
Constant	62646.42	3448.701	18.17	<0.001	55846.55	69446.29
Healthcare facilities	17096.41	1681.15	10.17	<0.001	13781.65	20411.16
Constant	53153.59	3025.614	17.57	<0.001	47187.93	59119.26

Amenities	Unstandardized coefficient β	Std. err.	T	P>t	95% CI	
					LL	UL
Green spaces parks	12042.05	1663.37	7.24	<0.001	8762.353	15321.75
Constant	63331.28	2833.808	22.35	<0.001	57743.81	68918.75
Gym & recreational centers	9462.205	1692.665	5.59	<0.001	6124.745	12799.67
Constant	68101.01	2795.118	24.36	<0.001	62589.83	73612.2
Road infrastructure & accessibility	18590.91	1757.46	10.58	<0.001	15125.69	22056.13
Constant	49818.18	3219.606	15.47	<0.001	43470.02	56166.34
Water supply & utilities	19341.4	2070.791	9.34	<0.001	15258.38	23424.42
Constant	47346.1	3891.603	12.17	<0.001	39672.95	55019.25

4.7.2. Multiple linear regression (MLR), standardized coefficients

As presented in table 11, the MLR analysis was computed to examine the influence of different amenities on the price of real estate. The regression model was run using 205 independent observations, and the summary result showed that the model was significant with $F(10, 194) = 22.99$, $p < .001$, which indicates that predictors (different amenities) jointly explained a significant portion of the variance in the real estate price (outcome variable). As displayed in the table 84.2% of the total variance ($R^2 = .8423$, adjusted R^2 of .8187) in the real estate price can be explained by variation in the amenities. The ANOVA table also showed that the SS was remarkably higher than the residual SS, which showed the explanatory variables significantly contribute to explaining the variation in the outcome. As this model was well fit, the real estate

developers and urban development planners should consider the relationship between each amenity and the real estate price.

After adjustment for other amenities using the MLR, security services, nearby schools, access to public transport, healthcare facilities had strong and positive relationship with the real estate price at p value of < 0.005 . Security service around the real estate increase the price per square meter by nearly 8,000 birrs ($\beta = 7715.71$, $P = 0.003$). Similarly, availability schools nearby the real estate ($\beta = 5012.78$, $P = 0.001$), access to public transport ($\beta = 5015.361$, $P = <0.001$), access to healthcare facilities ($\beta = 4290.13$, $P = 0.003$), access to gym and recreational centers ($\beta = 2512.88$, $P = 0.044$) were strongly and positively influence the real estate price ranged from 4000 to over 5000 birrs. Furthermore, availability of parking space ($\beta = 2135.67$, $P = 0.076$) and green spaces and parks ($\beta = 2518.55$, $P = 0.058$) around the real estate positively influences the real estate price at p value < 0.1 (**Table 10**).

Table 10: Multiple linear regression that assess the influence of amenities on real estate prices

Sources	SS	Df	MS	Number of obs = 205		
Model	1.8227e+10	10	1.8227e+09	F (10, 194)	=	22.99
Residual	1.5383e+10	194	79294425.5	Prob > F	=	0.0000
Total	3.3610e+10	204	164754806	R-squared	=	0.8423
				Adj R-squared	=	.8187
				Root MSE	=	8904.7
Variables	Standardized	Std. err.	T	P>t	95% conf. interval	
/Amenities	β Coefficient				LL	UL
Security service	7715.71	2578.99	2.99	0.003**	2629.25	12802.17

Variables /Amenities	Standardized β Coefficient	Std. err.	T	P>t	95% conf. interval	
					LL	UL
Parking space	2135.67	1197.23	1.78	0.076*	-225.59	4496.94
Nearby schools	5012.78	1422.39	3.52	<0.001***	2207.45	7818.12
Access to public transport	5015.36	1207.64	4.15	<0.001***	2633.57	7397.15
Shopping centers and markets	-870.08	1154.33	-0.75	0.452	-3146.72	1406.57
Healthcare facilities	4290.13	1424.22	3.01	0.003**	1481.19	7099.07
Green spaces and parks	2518.55	1322.05	1.91	0.058*	-88.88	5125.99
Gym and recreational centers	2512.88	1236.94	2.03	0.044**	73.31	4952.46
Road infrastructure & accessibility	3073.34	2190.57	1.40	0.162	-1247.05	7393.74
Water supply & utilities	2805.71	2078.17	1.35	0.179	1292.99	6904.42
Constant	34100.94	2634.76	12.94	0.000	28904.49	39297.38

*significant at P < 0.1 ** P < 0.005 ***P<0.001

4.8. Real estate property value from the developer's perspective

4.8.1. Overview of the Participants and the Real Estate

The in-depth interviews were conducted with five key-informants (KIs) from five real estate companies located in Addis Ababa: Ayat, Eniy, Gift, Nassew, and Noah. The KIs were purposively selected based on their experience, professional background, the availability of data,

and the willingness of institutions. Four of the five participants were male, and their ages ranged between 41 and 85 years. Regarding their educational status, two of them hold a doctor of philosophy (PhD), and the remaining three are master's holders. Three of them were part of the developers from the outset, and two of them (KIs from Eniy and Gift) were private employees. All the KIs had over ten years of experience within the real estate company, which helps them to address all the questions raised for them.

Three of the real estate mainly focused on mixed use (residential and commercial) and two companies work mainly for commercial use. The real estates have different sources of financing including investor funding, bank loan and personal savings. Price of the properties are mainly depending on the location and varied from 70,000 per square meter (Gift) to 150, 000 per square meter (Noah) (**Table 11**).

4.8.2. Major idea raised from the in-depth interview

The thematic analysis approach was followed to organize the findings from the interviews. Based on the information, three major issue were generated, including 1) observed importance of amenities on real estate value, 2) challenges and constraints of the real Estate industry, and 3) real estate developers' strategic response.

4.8.2.2. Importance of amenities on real estate value

All of the KIs emphasized that the availability and accessibility of amenities are key and the most important requirements for real estate property value. In addition to the quality of materials used to build the house and the internal qualities of the house, including the size, number of rooms, and furniture, external amenities, including parking service, availability of medical facilities, educational sectors, and others around the area, have a significant impact on the value of the real estate.

An 85-year-old, master holder developer KI said that:

“Amenities are value multipliers that has significant impact on price and client satisfaction. He also adds amenities change the housing from normal house to the most valued one with increasing its value by over thirty percent” [KI-1].

Other participants added that:

“In recent days clients considers different opportunities when the plan to buy a house; they do not merely focus on the structure of the house rather they consider safety, convenience, and accessibilities to major facilities for quality life. He also emphasized that proximity to key amenities is much better than very beautiful well-constructed buildings without nearby amenities” [KI-5].

All the KIs in this study agreed that amenities could be broad categorized into three as basic, community, and modern amenities. These amenities have unique tangible and intangible contribution on real estate value. Basic or foundation amenities such as roads, water supply, electricity and parking spaces are the minimum prerequisites both for customer satisfaction and real estate success and these are non-negotiable amenities.

A 41-year-old PhD holder KI emphasized that----

“It might be okay to live in a studio or smaller living room but it is very difficult to stay for few days in wide room without basic amenities including disturbed water supply; and these are the first clarifying criteria for buyers.” [KI-4].

Community amenities, also known as the pillars of livability, are also emphasized by the participants; particularly customers with family members first ask about the availability of schools, health facilities, and shopping even before anything, including the price. One of the KIs stressed, “Availability of hospital/health centers, schools, and groceries around the real estate make it more attractive for customers, and its value/price steadily increased.” (KI-2)

The last group of amenities mentioned by the KIs were modern amenities, which were also expressed as markers of prestige by the participants. These mainly include luxury and technology-driven amenities. All the participants mentioned that their companies’ plan was mainly focused on incorporating smart home features, including child care facilities.

A 70-year-old KI also acknowledged, “Nowadays customers want to feel modern and expect smart home technologies with security service and more green areas.” [KI-3].

4.8.2.2. Challenges and Constraints of the Real Estate Sector

Despite the Evident advancements and ongoing building in Addis Ababa's real estate market, a multiple constraint of financial, economic, and infrastructure barriers is happening in the market.

Reason mentioned by the KIs was due to the complete lack of accessible bank loans and daily inflation drives up material costs and not affordable for ordinary citizens

Four of the five participants also pointed out that unclear policies and bureaucratic delays in building amenities are another major challenge for the real estate. Lack of coordination between the real estate developers and the local administrative bodies another bottleneck for this sector. “----Lengthy approval process like for months sometimes for years to finalize the paperwork and the amenities areas already planned and agreed at the beginning of the construction” [KI-1]. The other major problem stressed by the participants is that every customer including the middle-income buyers needs everything with all amenities but with low price, which is difficult for developers to achieve; balancing the current price and expectation [KI-4].

4.8.2.3. Real estate developers’ future plan

All the in-depth interview participants agreed that collaboration with the local administrative bodies, policy makers and recently organized initiatives such as corridor plan is crucial to overcome basic amenities scarcity at all corners of Addis Ababa. Involving customers in the selection of sites, construction design, small meter square studio, and other real estate related matters is also vital to fulfill customers’ expectation.

----“listening client’s feedback carefully and adding the amenities or additional items that significantly improves the quality of life there is crucial both to improve client satisfaction and improve the value of the real estate.” [KI-3].

In general, the real estate developers conclude that amenities have paramount importance to both improve client satisfaction and increase the real state property. Detail key summary of the qualitative findings is also presented in **Table 6**.

Table 11: Descriptive summary of the real estate developers

Variables	Name of the real estate				
	Ayat	Eniy	Gift	Nassew	Noah
Age	85	45	41	60	70
Gender	Male	Female	Male	Male	Male

Variables	Name of the real estate				
	Ayat	Eniy	Gift	Nassew	Noah
Educational level	Masters	Masters	PhD	Masters	PhD
Business income/per month in birr	>100,000	>100,000	50-100,000	50,000-100,000	>100,000
Occupation	Developer	Private employee	Private Employee	Developer	Developer
How long have you been In real estate industry?	>10 years	>10 years	> 10 years	>10 years	>10 years
What type of real estate Development s do you focus on?	Mixed use	Mixed use	Commercial	Mixed use	Commercial
Sources of financing	Investor funding	Personal capital Bank loan	Personal capital Bank loans Investor funding	Personal saving Investment funding	-
Price of the properties per meter square.	110,000 sqm.	89,000	70-94000 (based on location)	82,000	150,000
Importance of amenities	Very important	Very important	Very important	Very important	Important/Very Important
Include attitudinal amenities to attract	Yes	Yes	Yes	Yes	Yes

Variables	Name of the real estate				
	Ayat	Eniy	Gift	Nassew	Noah
customers					
Additional amenities planned	High speed internet	Community spaces	Community spaces	Smart home features	Childcare Facilities
Influence of amenities on properties price	>30%	>20%	>30%	>20%	>30%

4.9. Linear regression diagnostics

According to this study, the common linear regression assumptions were checked to confirm the model was valid and reliable. Linearity of variables, independence of observations, and multicollinearity were checked using scatterplots, the Durbin Watson statistic, and VIF, respectively.

4.9.1. Linearity

The relationship between each predictor (amenity) and the outcome variable (real estate price) should be approximately linear. Montgomery *et al.* (2021) emphasized that linearity is one of the fundamental assumptions in linear regression, and failure to meet is distorts the result. Linearity can be checked using scatter plots. In this study case, the amenities were assessed as dichotomous variables as nearby and away. For such a dataset scholars (Cohen *et al.*, 2013) recommended that the point-biserial correlation to see the linear association. Significant correlation indicated that the predictor/amenities explains variation linearly in the outcome (real estate price) (Table 12).

Table 12: Linearity assumptions check using the point-biserial correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Real. Price	1.000										
(2) security	0.619	1.000									

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	(0.000)										
(3) parking	0.355	0.255	1.000								
	(0.000)	(0.000)									
(4) school	0.624	0.681	0.356	1.000							
	(0.000)	(0.000)	(0.000)								
(5) transport	0.471	0.448	0.135	0.448	1.000						
	(0.000)	(0.000)	(0.054)	(0.000)							
(6) shopping	0.393	0.394	0.256	0.473	0.400	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)						
(7) healthcare	0.581	0.573	0.270	0.657	0.468	0.468	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
(8) green	0.453	0.368	0.539	0.438	0.242	0.430	0.418	1.000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
(9) gym	0.365	0.272	0.422	0.305	0.122	0.328	0.293	0.495	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.081)	(0.000)	(0.000)	(0.000)			
(10) road	0.596	0.801	0.225	0.656	0.441	0.496	0.651	0.417	0.320	1.000	
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
(11) water	0.548	0.800	0.250	0.617	0.468	0.499	0.583	0.427	0.256	0.823	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

4.9.2. Normality Test

In this study, both graphical and statistical methods were applied to check the normality assumptions. First, after running the MLR, the standardized residuals histogram was displayed as shown in Figure 5, which is approximately a bell-shaped distribution without skewness and kurtosis. Moreover, the histogram illustrated that the residuals follow the normal distribution assumptions (Field, 2024). Furthermore, the Shapiro–Wilk test was also computed and presented in Table 13 and showed $W = 0.991$, $z = 0.627$, and $p = 0.265$. As the P-value is above 0.05, the null hypothesis of normality was not rejected and demonstrated that the residuals are normally distributed (Razali & Wah, 2011). This model fulfills both the bell-shaped histogram and the non-significant Shapiro–Wilk result ($p = 0.265$), which indicate that the normality assumption of the residuals is fulfilled (**Figure 5 and Table 13**).

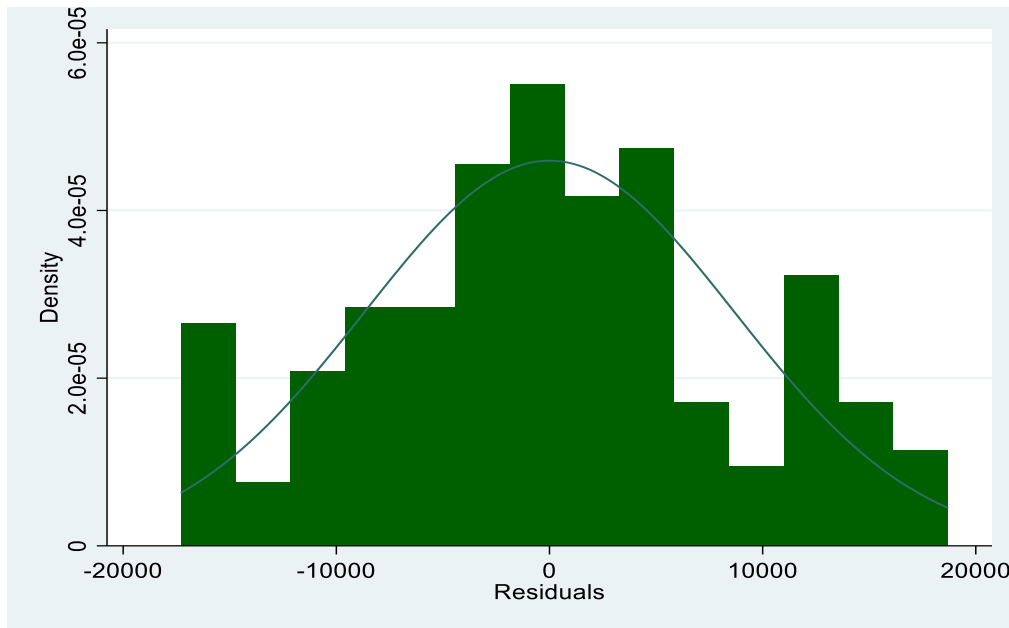


Figure 6: Histogram of the standardized residuals to check for normality

Table 13: Shapiro–Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
Residuals	205	0.99139	1.313	0.627	0.26527

4.9.3. Test of Homoscedasticity

In this study, homoscedasticity, which is defined as equal variance of residuals across all predictors/amenities, was examined using scatterplots. The residuals versus predicted (fitted) values of the outcome variable (real estate prices) were plotted as displayed in **Figure 6**. A random scatter of points around the horizontal line around zero indicated that the residuals are constant (Osborne & Waters, 2002). The Cook–Weisberg test was also computed to supplement the visual displayed to statistically assess the presence of heteroscedasticity ($\chi^2 = 29.56$, $P = 0.001$), which indicates the presence of slight heteroscedasticity. To overcome this violation and eliminate biased standard errors, the robust standard errors were applied to correct this violation and improve the reliability of the final model (Breusch & Pagan, 1979).

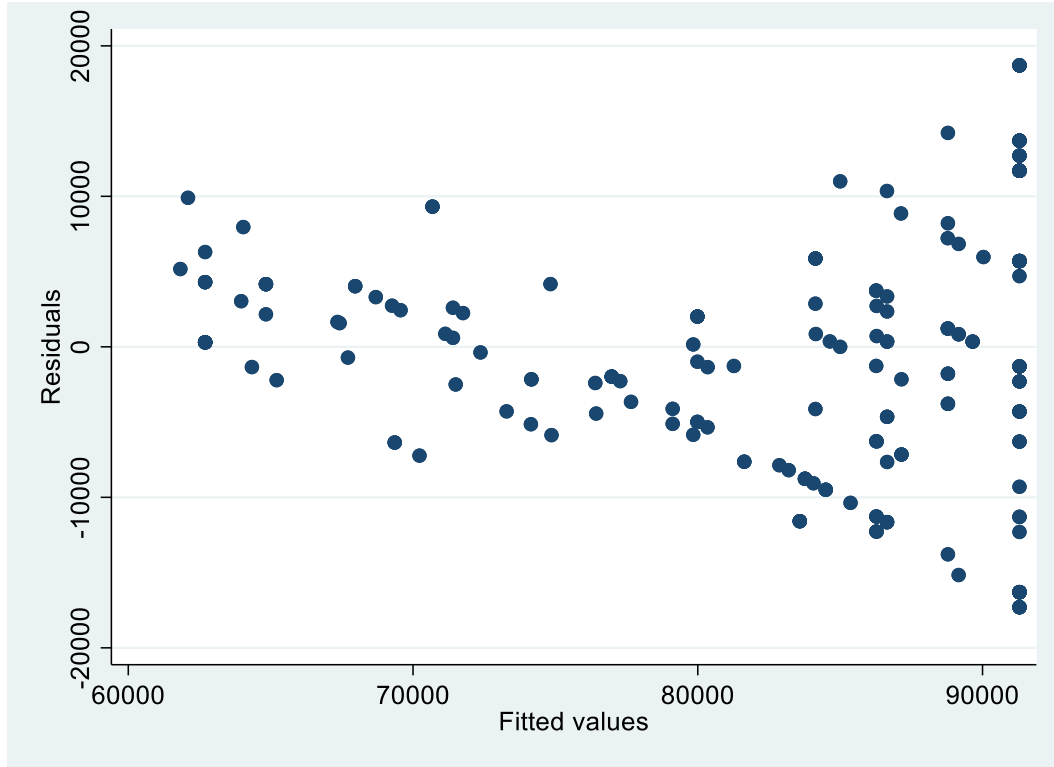


Figure 7: Residuals versus fitted values plot for the multiple linear regression model

4.9.4. Multicollinearity

Multicollinearity, which describes the presence of strong correlations among predictors (Hair *et al.*, 2019). Both Variance Inflation Factor (VIF) and Tolerance were computed in this study to examine the presence of multicollinearity. In this study, mean VIF = 2.50 with a minimum of 1.46 and a maximum of 4.37, which indicates there is no multicollinearity among the predictors included in the final model (**Table 14**).

Table 14: Multicollinearity assessment among the predictors included in the final model.

Variables/Amenities	VIF	1/VIF (Tolerance)
Security services	4.37	0.229090
Parking space	4.03	0.247946
Nearby schools	3.85	0.259904

Variables/Amenities	VIF	1/VIF (Tolerance)
Access to public transport	2.54	0.394013
Shopping centers and markets	2.21	0.453485
Healthcare facilities	1.89	0.529595
Green spaces & parks	1.63	0.613541
Gym & recreational centers	1.54	0.649466
Road infrastructure & accessibility	1.46	0.684526
Water supply & utilities	1.46	0.685731
Mean VIF	2.50	

In summary, common multiple linear regression assumptions were tested to ensure the validity of the model. The normal distribution assumption was checked using the histogram of residuals and the Shapiro-Wilk test ($p = 0.265$). Minor homoscedasticity was detected using the Cook–Weisberg test and corrected by the robust standard errors. Furthermore, VIF values ranged from 1.46 to 4.37 with a mean VIF of 2.50, which is far below the critical threshold of 10.

5. DISCUSSION

This chapter interprets the findings of the study and compares them with existing empirical literature. The discussion focuses on explaining the meaning of results rather than repeating statistical outputs. The implications of the findings, their contribution to theory and practice, and the limitations of the study are also presented.

The aim of this study was to examine the availability of urban amenities around real estate properties and their influence on property values in selected sub-cities of Addis Ababa. The mean property price was approximately 83,000 ETB per square meter, indicating a rapidly growing and highly competitive urban housing market.

The findings from the multiple linear regression revealed that urban amenities significantly shape property values in Addis Ababa, even after controlling for other factors. However, the importance of these amenities is not uniform; rather, buyers assign different economic value premiums depending on the type of service.

Security services emerged as the most influential determinant of property value. This finding indicates that safety is not simply a basic requirement but a major economic driver in the housing market. In practical terms, buyers are willing to pay a substantial premium for perceived safety, reflecting the broader urban concern about security in rapidly expanding cities.

Similarly, access to schools and transport infrastructure significantly increases property value. This suggests that housing demand in Addis Ababa is strongly shaped by family needs and daily mobility considerations. Properties located near educational institutions and transport corridors are perceived as more convenient, reducing time and cost burdens for households, which increases willingness to pay.

Healthcare access also plays an important role in shaping property values. This reflects the growing importance of proximity to essential services, especially in urban environments where healthcare accessibility is associated with both convenience and risk reduction.

Lifestyle-related amenities such as recreational centers, parking spaces, and green areas also contribute positively to property value, although their influence is relatively weaker compared to core services. This suggests a transition in urban preferences, where buyers increasingly consider quality-of-life features in addition to basic infrastructure.

The findings of this study are consistent with international evidence from both developed and developing countries, which shows that urban amenities significantly influence real estate prices. Studies conducted in countries such as China, Brazil, and South Africa similarly report that security, education, transport access, and healthcare are key determinants of housing value.

However, the magnitude of influence observed in this study appears relatively stronger than in many developed-country contexts. This difference can be explained by the unique urban conditions of Addis Ababa, where rapid population growth, infrastructure deficits, and perceived

security concerns make basic services more valuable in shaping housing decisions. In such contexts, amenities function not only as convenience factors but also as essential determinants of livability.

An important finding of this study is that road infrastructure and water supply were not statistically significant in the final regression model, despite being highly valued in the qualitative findings.

This apparent contradiction can be explained by the concept of threshold effects. In urban housing markets, basic infrastructure such as roads and water is often considered a minimum requirement rather than a differentiating factor. Once a basic level of access is available across most properties, these variables no longer explain differences in price between housing units.

Therefore, while these amenities are essential for market participation, they do not necessarily create variation in property prices when analyzed alongside stronger differentiating factors such as security, location, and social infrastructure.

The qualitative findings strongly emphasized that basic amenities such as water supply, roads, and electricity are “non-negotiable” factors in housing decisions. This aligns with the quantitative findings when properly interpreted: these amenities are necessary conditions for housing demand but not sufficient to explain price differences.

On the other hand, developers highlighted modern and lifestyle amenities as value-enhancing features, which aligns with the regression results showing that recreational and community-based facilities contribute to higher property values.

This integration shows that quantitative and qualitative findings are not contradictory but rather reflect different dimensions of the same phenomenon: Quantitative results capture marginal price variation and Qualitative results capture minimum expectations and lived experiences.

The observed discrepancy between buyer-reported prices and developer-reported prices reflects differences in market reporting rather than measurement error.

Developers often report listing or current market prices, while buyers report transaction prices at the time of purchase. Therefore, buyer-reported transaction data was considered more appropriate for regression analysis because it reflects actual market exchange values rather than advertised prices.

This study contributes to hedonic pricing theory by demonstrating that in emerging African urban markets, property value is strongly driven by a limited set of core amenities, particularly security, education, transport, and healthcare. Unlike mature real estate markets where luxury amenities may dominate price differentiation, this study shows that in rapidly urbanizing cities like Addis Ababa, basic urban services still carry the highest economic value.

6. CONCLUSIONS AND RECOMMENDATIONS

This is the final chapter that summarizes key findings of the study based on the objectives of the study. Based on the findings, recommendations were forwarded for different stakeholders, including how to overcome the problems.

6.1. Conclusions

The influence of amenities on the real estate property price was assessed among 205 buyers and 5 key informants from five real estate companies: Ayat, Eniy, Gift, Nassew, and Noah. The quantitative investigation found that the average price of the real estate was 83,009.76 ETB per square meter, which is comparable to previous studies. The study also demonstrated that there is a significant variation ($P < 0.001$) based on the location. The average price was higher in Kazanchis with a mean price of 101,875 ETB and lower in Jemo with 71,422 ETB. Moreover, the study reported the buyers' perception about the importance of amenities around the real estate property and their level of satisfaction with them. Availability of security service stations (76.59%), nearby health facilities (68.78%), and road infrastructure and access to transportation (66.83%) were the top amenities with higher satisfaction rate.

The inferential statistics using the multiple linear regression model demonstrated that there is a large variation in the real estate price ($R^2 = 84.23\%$) because of the amenities. Availability of security service station within the surrounding area of the real estate company increase the property value by 7715.71 per un-SQM. These values are the unstandardized regression coefficients and represent the actual monetary increase in birr per square meter associated with the presence of each amenity, holding other factors constant. Nearby educational facilities, access to public transportation, healthcare facilities, gym and recreational centers, availability of parking space and green space independently increase the real estate property value by 5012.78, 5015.36, 2512.88, 2135.67 and 2518.55 ETB per SQM, respectively. This finding indicated that amenities are key influencing factors for the real estate property value and fair distribution of government and private amenities is mandatory to minimize the gap across the city.

The qualitative part of exploration of this study also emphasized that availability and accessibility of amenities are among the top most importance requirements for real estate property valuation and direct impact on the its business income. The key informants also raised

the challenges of the real estate market as it passes through a lot of difficulties and still in dormant stage due to costly of the raw materials, disruption basic infrastructures and amenities. As a solution, they proposed that collaboration with the local administrative bodies, policy makers, and urban planners is crucial to overcome basic amenities deficit at all corners of Addis Ababa city. Furthermore, participating alumni customers in the selection of sites, construction design and other real estate related issues are critical to improve the real estate market and client satisfaction.

6.2. Recommendations

This study showed that amenities are the main determinants of the real estate prices in Addis Ababa. In addition, amenities have significant impact both on buyer's satisfaction and on real estate markets growth. Based on the key findings of this study the following recommendations were forwarded to different stakeholders including buyers, real estate developers, playmakers/urban planners and researchers.

Buyers: As noted in this study, proximity to amenities has significant impact on the real estate price. When deciding to buy either residential or commercial properties, assessing the availability, accessibility and quality of the amenities is equally important with the internal quality of the house such as the location, number of rooms, quality of the materials for construction. They also have to consider the long-term benefits and maximizing returns in the real estate market. Considering availability of security service station, educational facilities, transportation access, healthcare facilities, and access to lifestyle amenities such as gym and recreational centers have imperative to maximize the value of the property in the future.

Real estate developers: To be competitive the real estate developers are expected to work in collaboration with the government and the local administrative to improve the accessibility and quality of the amenities. As pointed by the participants of this study proximity to security service locations such as street lighting and safe public space, proximity to quality schools, parking space, and access to public space enhances the value of the real estate. In addition, as stressed by the purposively selected real estate developer's lifestyle amenities and technologically innovative houses gets popularity particularly by high-income buyers. Therefore, the developers must work to improve the accessibility and quality of the infrastructure and amenities surrounding the real estate to add value on their project.

Policymakers/urban planners: To build successful and equitable cities distribution of government amenities as well as improving the quality of existing ones is crucial. For instance, as noted in this study amenities mainly controlled by the government such as security service stations had significant impact on real estate prices. Most of customers (~77.0%) of the alumni were satisfied/very stratified with the availability of security service stations around their property. Therefore, equitable distribution and maintaining the quality of amenities are one of the keys pushing factor to improve urbanization, consistent with the urban planning literature and master plans reviewed in Chapter Two that emphasize coordinated infrastructure development through initiatives such as the Corridor Limat plan.

Researchers: In this study, the availability of amenities, mainly geographical proximity to the real estates was studied. In addition, the real estate developer's perspective, challenges, and their future strategic responses were extensively addressed. However, the effect of the internal quality of the amenities on the real estate price was not addressed. As the real estate market is influenced by several interlinked factors further study including both the internal and external factors, supporting with qualitative exploration of the barriers is mandatory. Hence, scholars with similar interest should consider the quality of the amenities rather than merely focusing on the physical proximity. Future researchers should consider both the proximity and the quality of the amenities to examine the influence of amenities on the real estate market. Scholars with similar interest should consider walking time or GPS coordinates as more precise measures of proximity, conduct hedonic pricing studies that incorporate direct quality indicators (such as service standards, maintenance levels, and infrastructure condition), and explore the interaction between internal property attributes and external neighborhood amenities across a broader range of Ethiopian cities to address the current limitation in scope and to strengthen the generalizability of findings for emerging markets.

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APPENDICES

Declaration of informed consent

Dear participant!

Good morning/afternoon; my name is ----- I am a student from department of Real property, EiABC; Addis Ababa University. I am conducting a research on the topic “Amenities and their Influence on the Real Estate Value: The Case of Addis Ababa City.” I would like to ask you few questions about amenities and their influence on the real estate value. The questionnaire does not concern on the private (personal) information, which will maintain confidentiality. However, your honest participation and answers to the questionnaire will help us in better understanding of the problem and to give guidance on how to do on the solution within the study area. You have full right to refuse part of or whole of the questionnaires and no one force you to do so. So, would you willing to participate actively and honestly?

☐Yes

☐No

Contact person in need investigator:

Name: Habtamu Misganaw

Tel: +251 9 38267069

E-mail: habtiemisganaw00@gmail.com or habtamuchanie@obu.edu.et

Part I: Questionnaire for Real Estate Buyers

Serial no	Questionnaire	Alternative choice for responses
1	Age: _____	
2	Gender:	☐ Male ☐ Female
3	Educational Level	☐ Primary

Serial no	Questionnaire	Alternative choice for responses
		☐ Secondary ☐ Diploma ☐ Bachelor's ☐ Master's ☐ PhD
4	Monthly Household/Business Income (ETB):	☐ <10,000 ☐ 10,000-30,000 ☐ 30,001-50,000 ☐ 50,001-100,000 ☐ >100,000_____
5	Occupation	☐ Government Employee ☐ Private Employee ☐ Business Owner ☐ Real Estate Developer ☐ Other (Specify: _____)
6	What is the price of the properties per meter square?	

Serial no	Questionnaire	Alternative choice for responses
7	Have you purchased real estate in Addis Ababa?	☐ Yes ☐ No
8	Type of Property Purchased	☐ Apartment ☐ Villa ☐ Commercial Property ☐ Other (Specify:
9	What was the primary purpose of your purchase?	☐ Residential ☐ Investment ☐ Rental Income ☐ Other (Specify:
10	What was the source of financing?	☐ Personal Savings ☐ Bank Loan ☐ Family Support ☐ Other (Specify: _____)
11	On a scale of 1-5, how important were the following amenities in your purchase decision? (1 = Not Important, 5 = Very Important)	

Serial no	Questionnaire	Alternative choice for responses
	Security Services	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Parking Space	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Proximity to Schools	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Access to Public Transport	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Shopping Centres & Markets	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Healthcare Facilities	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Green Spaces & Parks	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Gym & Recreational Centres	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Road Infrastructure & accessibility	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Water Supply & Utilities	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
12	Have you experienced an increase in property value since purchase?	☐ Yes ☐ No ☐ Not Sure
13	If yes, what do you believe contributed most to the increase?	☐ Improved Infrastructure ☐ Proximity to New Amenities ☐ Demand in the Area ☐ General Economic Growth ☐ Government Policies ☐ Other (Specify:

Serial no	Questionnaire	Alternative choice for responses
		_____)
14	Would you be willing to pay more for a property with enhanced amenities?	☐ Yes ☐ No
15	If yes, by what percentage do you think amenities contribute to price appreciation?	☐ <10% ☐ 10-20% ☐ 21-30% ☐ >30%
16	How satisfied are you with your property in terms of amenities? (1 = Not Satisfied, 5 = Very Satisfied)	
	• Security Services	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Parking Space	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Nearby Schools	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Access to Public Transport	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Shopping Centres & Markets	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Healthcare Facilities	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Green Spaces & Parks	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Gym & Recreational Centres	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Road Infrastructure & Accessibility	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	• Water Supply & Utilities	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Serial no	Questionnaire	Alternative choice for responses
17	Would you consider buying another real estate property in Addis Ababa?	☐ Yes ☐ No ☐ Not Sure
18	What additional amenities would you prioritize in a future purchase?	☐ Smart Home Features ☐ High-speed Internet ☐ Community Spaces ☐ Childcare Facilities ☐ Sustainable Energy Solutions ☐ Other (Specify: _____)
19	Is there a parking facility nearest to your house?	☐ Yes / ☐ No
20	Is there a school or educational facility nearest to your house?	☐ Yes / ☐ No

Serial no	Questionnaire	Alternative choice for responses
21	Is there a public transportation hub nearest to your house?	☐ Yes / ☐ No
22	Is there a shopping or entertainment center nearest to your house?	☐ Yes / ☐ No
23	<i>Is there a medical</i> or healthcare facility nearest to your house?	☐ Yes / ☐ No
24	Is there a gym or sports facility nearest to your house?	☐ Yes / ☐ No
25	Is there a green space or park nearest to your house?	☐ Yes / ☐ No
26	Are there security services nearest to your house?	☐ Yes / ☐ No
27	Is there a reliable water supply nearest to your house?	☐ Yes / ☐ No
28	Is there good road infrastructure nearest to your house?	☐ Yes / ☐ No

Part II. Questionnaire for Real Estate Developers

Interview guide for selected real estate developers

Serial no	Questionnaire	Alternative choice for responses
1	Age: _____	
2	Gender:	☐ Male

Serial no	Questionnaire	Alternative choice for responses
		☐ Female
3	Educational Level	☐ Primary ☐ Secondary ☐ Diploma ☐ Bachelor's ☐ Master's ☐ PhD
4	Monthly Household/Business Income (ETB):	☐ <10,000 ☐ 10,000-30,000 ☐ 30,001-50,000 ☐ 50,001-100,000 ☐ >100,000_____
5	Occupation	☐ Government Employee ☐ Private Employee ☐ Business Owner ☐ Real Estate Developer

Serial no	Questionnaire	Alternative choice for responses
		☐ Other (Specify: _____)
6	How long have you been in the real estate development industry?	☐ <2 years ☐ 2-5 years ☐ 6-10 years ☐ >10 years
7	What type of real estate developments do you focus on?	☐ Residential ☐ Commercial ☐ Mixed-use ☐ Other (Specify: _____)
8	What is your primary source of project financing?	☐ Personal Capital ☐ Bank Loans ☐ Investor Funding ☐ Other (Specify: _____)
9	What is the price range of the properties per meter square?	☐ 50,000 - 75,000ETB ☐ 75,000 - 100,000ETB ☐ 100,000 - 120,000ETB ☐ 120,000 - 150,000ETB ☐ >150,000ETB
10	On a scale of 1-5, how significant are the following amenities in influencing property value? (1 = Not Significant, 5 = Very Significant)	
	Security Services	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

Serial no	Questionnaire	Alternative choice for responses
	Parking Facilities	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Schools & Educational Institutions	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Transportation Accessibility	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Shopping & Entertainment	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Healthcare & Medical Services	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Parks & Green Spaces	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Gym & Sports Facilities	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Road Infrastructure	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
	Water & Electricity Supply	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
11	To what extent do amenities influence property prices?	
12	Do you include additional amenities to attract buyers?	☐ Yes ☐ No
13	If yes, what additional amenities do you integrate? To what extent do amenities influence the pricing strategy of your properties?	

Serial no	Questionnaire	Alternative choice for responses
14	How do you express the effect of physical proximity of the real estate property to amenities on its prices and future value?	
15	How do you see the overall real estate market value, including importance of amenities and challenges of real estate sectors?	
16	What strategies do you plan to implement to attract prospective buyers?	

Annex: Sample Pictures from the survey



ANNEX: MANUSCRIPT

Amenities and Their Influence on the Real Estate Value: The Case of four selected sub cities in Addis Ababa

BY

Habtamu Misganaw Chanie¹, Teshome Tefera²

¹**Corresponding author:** Postgraduate Student (Urban Land and Property Valuation), Department of Urban and regional Planning, Addis Ababa University, Ethiopia. Email: habtiemisganaw00@gmail.com

²**Assistant Professor** (Urban development), Department of Urban and regional Planning, Addis Ababa University, Ethiopia. Email: teshome.terera@eiabc.edu.et

Abstract

This study aimed to assess the influence of neighborhood amenities on real estate property values in the Nifas Silk-Lafto, Kirkos, Bole, and Lemi Kura sub-cities of Addis Ababa, Ethiopia. A convergent mixed-methods design was employed, combining a quantitative cross-sectional survey of 205 real estate buyers with qualitative interviews of key informants from selected real estate companies. Quantitative data were analyzed using descriptive statistics, Analysis of Variance (ANOVA), and multiple linear regression, while qualitative data were analyzed thematically. Findings from both approaches were triangulated to enhance the validity of the results. The study found that the mean real estate price was Ethiopian birr 83,009.76 per square meter ($SD = 12,835.68$). Multiple linear regression analysis revealed that security services ($\beta = 7,715.71$, $p = 0.003$), proximity to schools ($\beta = 5,012.78$, $p = 0.001$), access to public transportation ($\beta = 5,015.36$, $p < 0.001$), and healthcare facilities ($\beta = 4,290.13$, $p = 0.003$) had significant positive effects on property values. Additionally, the availability of parking spaces ($\beta = 2,135.67$, $p = 0.076$) and proximity to green spaces and parks ($\beta = 2,518.55$, $p = 0.058$) positively influenced property prices at the 10% significance level. Qualitative findings further indicated that neighborhood amenities play a critical role in enhancing customer satisfaction and increasing property values. The study concludes that neighborhood amenities are important determinants of real estate property values in Addis Ababa. Therefore, real estate developers

should prioritize the provision and accessibility of key amenities to enhance property values, improve buyer satisfaction, and attract potential customers..

Keywords: *real estate price, neighborhood amenities, hedonic pricing, regression analysis, Ethiopia*

1. Introduction

The real estate market is a critical driver of economic development and urbanization, housing, commercial spaces, and infrastructure that shape the quality of life in cities (W. Gao *et al.*, 2024). In addition to the size and quality of construction materials, the real estate values are significantly influenced by the availability and quality of amenities around the area (Ersoz *et al.*, 2018). Amenities have significantly contributed to the desirability and functionality of a location, directly impacting property values and market trends (Ferlan *et al.*, 2017).

Amenities are the non-physical features or services that enhance the desirability of a property and make it more attractive to potential buyers or renters (Conte, 2023). These amenities can range from physical features, such as swimming pools, gyms, and parking spaces, to location-specific benefits, such as proximity to public transportation, shopping centers, schools, and recreational facilities, educational institutions, healthcare facilities, transportation networks, and commercial centers (Gyourko *et al.*, 2013).

The relationship between amenities and real estate values has been a subject of interest in real estate economics (Diamond, 1980). Proximity to schools, for instance, has been associated with higher property prices, as families prioritize access to quality education (Rosen, 1974). Similarly, access to efficient public transportation reduces commuting times, enhancing property desirability in urban areas (Zhou *et al.*, 2022). The degree to which these factors influence property values varies across regions and is shaped by local cultural and economic contexts (Ersoz *et al.*, 2018).

The importance of amenities in determining real estate values is well-documented, yet the specific impact of various types of amenities on property prices remains a subject of ongoing research (Solerealty, 2024). Properties close to transportation hubs or transit lines tend to command higher prices due to the convenience they offer to commuters (Leontev & Mayburov, 2021; Mekuria *et al.*, 2024). Similarly, access to schools, parks, and shopping areas has been found to raise property values, as these amenities enhance the quality of life for residents and attract higher-income buyers (Rosenthal, 2014).

The growing demand for "lifestyle amenities" in residential real estate, such as fitness centers, communal workspaces, and eco-friendly features, has also become a defining trend in the market, particularly in urban centers (Bai *et al.*, 2020). Modern homebuyers increasingly seek properties that offer a balance of convenience, comfort, and sustainability (Flambard, 2017). For instance, the presence of energy-efficient technologies, green spaces, and amenities like electric vehicle charging stations has been shown to positively influence property values, particularly in environmentally conscious markets (Glaeser *et al.*, 2008).

The value of amenities is not uniform across all real estate markets, and various factors such as geographic location, demographic trends, and economic conditions can affect how much these amenities influence property values (Mulligan & Carruthers, 2011). In some cases, amenities may be perceived as more valuable in specific market contexts. For example, in luxury real estate markets, high-end amenities such as private pools, spas, and concierge services can significantly increase a property's value, while in more affordable housing markets, the proximity to public services and transportation may have a more pronounced effect (Yu *et al.*, 2023).

Despite the growing interest in the role of amenities, there is a lack of consensus on which amenities have the greatest impact on property values in different contexts, as well as on how these amenities interact with other market variables, such as local economic conditions and property characteristics (Mulligan & Carruthers, 2011).

In Addis Ababa, Ethiopia, the real estate market has experienced significant expansion in recent years, driven by urbanization, population growth, and infrastructure development (Ethiopia, 2021). However, despite the city's growth, limited research has been conducted to understand the specific role of amenities in shaping property values within this context.

The real estate market is influenced by several factors, including the availability and quality of amenities (Terterashvili & Shaburishvili, 2021). Proximity to certain amenities heavily influences homebuyer preferences and their willingness to pay premiums. For instance, (Huang, 2018) demonstrated that homes near quality public schools or efficient transit systems tend to appreciate faster than those without such access. Similarly, Chen *et al.* (2022) highlights how

green spaces contribute positively to urban housing markets by enhancing aesthetic appeal and providing recreational opportunities.

A number of empirical evidences reported that different amenities influences the real estate values. Studies conducted in Brazil's Metropolitan and Cape Town, South Africa demonstrated that sense of security or proximity of the security station increases the value of the real estate price (Odubiyi *et al.*, 2019; Vetter *et al.*, 2013). A study in US showed that houses closer to elementary, middle or high schools have higher price (Huang, 2018). Moreover, Wen *et al.* (2014) from Hangzhou, China found that educational facilities have a positive capitalization effect on housing price. Furthermore, access to public transport (Cordera *et al.*, 2019; Leontev & Mayburov, 2021) and access to healthcare facilities Gu *et al.* (2024); (Mekuria *et al.*, 2024); Zhou *et al.* (2022) significantly increase the value of the real estate property. Access to gym and recreational centers (Feng & Humphreys, 2018); Keeler *et al.* (2021), and availability of green spaces and parks (Chen *et al.*, 2022; Lin *et al.*, 2013) are also increase the real estate price.

Although previous international studies provide valuable insights, empirical studies that address the influence of amenities on the real estate market is not yet well studied in developing nations like Ethiopia. Urbanization is rapidly growing in Ethiopia, particularly in Addis Ababa despite the distribution of amenities are highly varied across the city (Mezgebo, 2020). The real estate market on the other hand is highly influenced by the distribution of the amenities in addition to the internal qualities. Hence, investigation the influence of different amenities including proximity security service stations, health facilities, and educational facilities, parking service, green space and utilities on real estate market is imperative to promote equitable and sustainable growth.

In Ethiopia, particularly in Addis Ababa, the real estate price doubled and tripled in some areas within the last few years, which makes them only affordable for high-income customers. Assefa (2017) found that location, physical characteristics of property, and the accessibility of properties are the major direct influencing factors for the real estate price. On the other hand, Mekuria *et al.* (2024) ascribed that plot size, floor area, number of rooms, age of the house, finishing material, direction of the house, distance of the property from the main road, and involvement of brokers in the transaction process significantly contribute to the residential real estate prices. However, as far as our knowledge is concerned, the influence of amenities on the real estate value is not

addressed. The extent and dynamics of how amenities influence real estate prices across different socioeconomic and geographic contexts provide valuable information for buyers, developers, and policymakers. The aim of this study is to examine the extent to which amenities influence real estate prices within the Nifas Silk-Lafto, Kirkos, Bole, and Lemi Kura sub-cities of Addis Ababa, Ethiopia. It seeks to identify the key categories of amenities that exert a significant impact on property values in the selected sub-cities, thereby clarifying which features most strongly shape market dynamics. It also evaluates how both the proximity and type of amenities contribute to variations in property valuation, highlighting the spatial and qualitative dimensions of amenity effects. Furthermore, it aims to explore the perspectives of real estate developers regarding the role of amenities in determining property values, thereby integrating professional insights into the broader analysis.

2. Research Methodology

2.1. Description of the study area

This study was conducted in Addis Ababa (**Fig. 1**), which is the capital city of Ethiopia and located in the central highlands with an altitude of approximately 2,355 meters. It lies in the central highland of Ethiopia and on the western edge of the Rift valley in the Eastern Africa region. Located between $8^{\circ} 46' 0''$ and $9^{\circ} 11' 30''$ N Latitude and $38^{\circ} 35' 30''$ and $38^{\circ} 57' 30''$ E Longitude. Addis Ababa covers an area of approximately 519.482 km² and it is the highest capital city in Africa and it serve as the economic, cultural and political center of the country. The administrative structure of Addis Ababa is divided in 10 sub-cities (kifle ketemas) and 116 woredas and the city governed by the Addis Ababa City Administration, headed by a mayor.

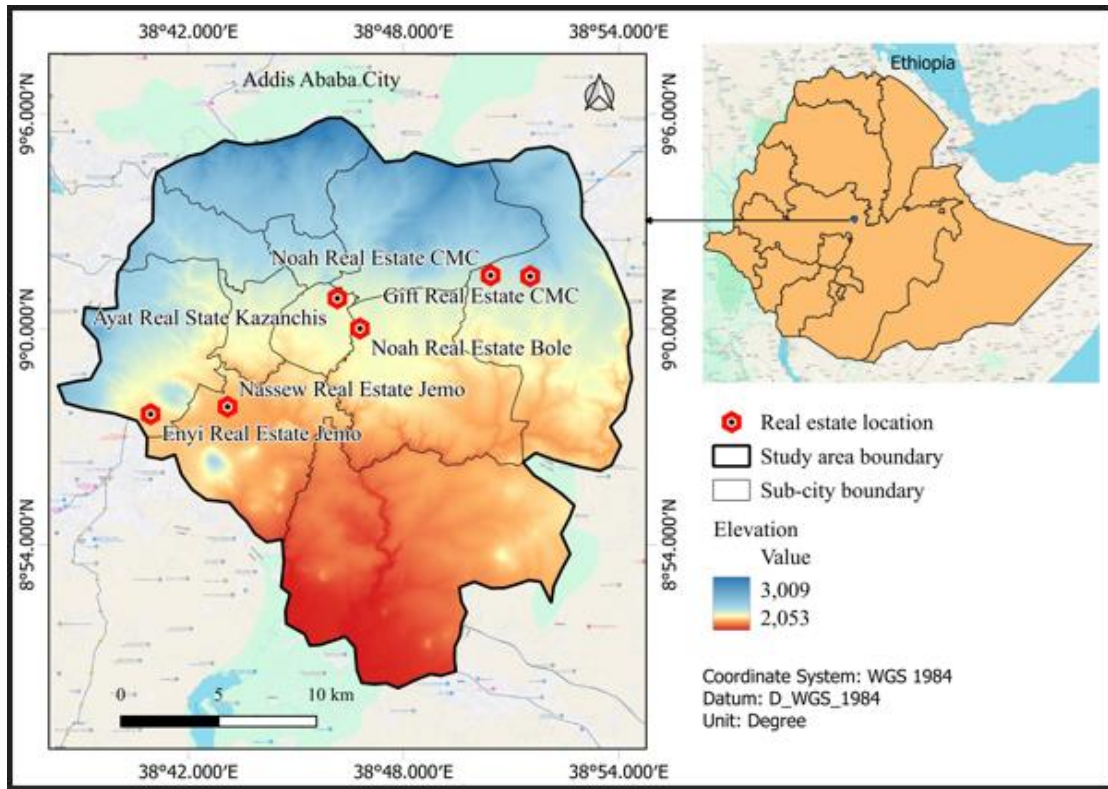


Figure 7 Location Map of the study area

Housing Market Dynamics and Real Estate Development

Nowadays, Addis Ababa accounts significant proportion of countries GDP and it is the center for major economic activities and urbanization. On the other hand, rapid population growth and urbanization results in supply-demand gap, which leads increasing demand for housing and commercial spaces. The 2024 Central Statistical Agency report showed that the Addis Ababa's population surpassed five million, with continuous annual growth driven by migration and annual average growth rate of 4.1% (ESS, 2024).

Although it did not completely resolve housing demand, the real estate sector in Addis Ababa gets popularity since late 1990s and come-up with a number of packages including residential, commercial, and mixed-use projects emerging. Access to amenities such as schools, roads, healthcare facilities, markets, green spaces, and public transport directly influence real estate values, as properties located near high-quality infrastructure and social amenities tend to command higher prices.

Urban Planning History and Recent Transformations

Since its establishment Addis Ababa has gone through ten master plans including the 1936 Le Corbusier's plan, the 1938 Guidi and Valle's plan, three plans based on the British town planning model from 1956 to 1966, the plans developed by the Polonyi and an Ethiopian-Italian team in 1978 and 1986, and the 2006 and 2017 master plans (UN Habitat, 2017). In addition, in recent years, the city is under major urban transformation with corridor development initiative (Corridor Limat), which enhances infrastructure, green spaces, and increase connectivity across the city that indirectly fueled the real estate sector expansion.

2.2. Research study Design

A Research Study Design is defined as a framework (methods and procedures) used to collect and analyze the data on variables identified for a particular research problem (Ranganathan & Aggarwal, 2018). In this study, the convergent mixed-methods design was employed; the analytical cross-sectional study design was applied for the quantitative part and phenomenological interview was employed for the qualitative part. In the current study, we collected data from buyers using survey questioners and at the same time, we collect data from real estate developers using open-ended interview guides. The convergent mixed methods design is appropriate for our study as the is one of the research approach's where both the quantitative and qualitative data are collected and analyzed separately but during the same time period (Katz-Buonincontro, 2024).

For the quantitative part, independent variables such as the availability of different amenities and the outcome/dependent variables measure using the average price per square care meter was assessed using the analytical cross-sectional study design. In addition to reporting the description of each variable, the relationship between different amenities (i.e. Security service stations, transportation access, nearby schools, health care facilities, recreational center, parking and green space) the real estate property price was assessed. For such data the analytical crosses sectional study design is ideal and used in this study (Aggarwal & Ranganathan, 2019). For the qualitative component, the phenomenological interview, which is used to explore the experience of the real estate developers in depth, was applied (Bevan, 2014).

2.3. Population of the Study

2.3.1. Source population

Kumar (2018) defined source population as the larger pool of population in which the study population is drawn. In this study, all customers of the real estate developers in Addis Ababa were considered as the source population for the quantitative part. The customers were included in this study irrespective of the property type, real estate Company, and location. Hence, the study population is representatives of the broad real estate property buyer's in Addis Ababa. On the other hand, all individuals directly involved or owners of the real estate companies were considered as the source population for the qualitative part. These groups were appropriate for our study as phenomenological interview needs individuals with ample experience and direct involvement with the problem under investigation (Creswell & Poth, 2016).

2.3.2. Study population

Lohr (2021) described the study population as the subset of the source population that fulfil the eligibility criteria and accessible to the investigator during the data collection period. In this study customers or buyers residing in districts of Addis Ababa including Bole, CMC, Jemo and Kazanchis were considered as the study population. Likewise, individuals or representatives of the selected real estate developers from the selected real estate companies including Nassew, Noah, Ayat, Gift, and Enyi were considered as the study population for the qualitative component of this study.

2.3.3. Sampling unit and sampling frame

Kothari (2004) defines sampling unit as the basic element for selection during the sampling procedure. In the current study, individual real estate customers or buyers in the selected locations (i.e. Bole, CMC, Jemo and Kazanchis) were the sapling unit for the quantitative part. On the other hand, experts from the selected real estate companies (i.e. Nassew, Noah, Ayat, Gift, and Enyi) were sampling unit for the qualitative part. Two separate historical documents make up the sampling frame for this study, which aligns with the multi-stage design. The 2025 Addis Ababa Trade Bureau registry, which offered a general list of 996 registered developers within the four target sub-cities, served as the sampling frame for the first step of business entity and geographic unit selection. The official client delivery registries (2018–2025) kept by the five chosen real estate companies (Nassew, Noah, Ayat, Gift, and Enyi) made up the sampling frame

for the last phase of individual participant selection.

The names and records of the 2,312 homebuyers who made up the entire study population were recorded in this particular frame. The study was able to identify the final 205 respondents by performing a precise proportional allocation and a simple random sampling using these official delivery records as the frame. This ensured that each chosen unit was a verified property owner with firsthand experience of the amenities offered.

2.3.4. Study unit

Study unit is defined as the units of analysis where the data are actually collected (Babbie, 2020). In this study individual was the study unit both for the quantitative and qualitative parts. Individual buyers/customers for the quantitative and representative of individual real estate developers for the qualitative part were the study units for the quantitative and qualitative part, respectively..

2.3.5. Eligibility criteria

All individuals who bought houses from real estates were included in this study. In addition, individuals who work as real estate were included for the in-depth interview. Individuals who were not available after three consecutive house visits were excluded from the study.

2.3.6. Sample size determination

The sample size was determined following the Yamane's formula (Yamane, 1973), and a total of 205 sample customers were drawn as shown in the calculation below. Based on the information obtained from the real estate owners 2312 residential real estate properties have delivered in the selected real estate companies with in selected location in Addis Ababa (i.e. the detail is presented under the sampling technique below). Considering the commonly used level of precision and cost of data collection 7% was used in this study.

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = required sample size

N= total population size

e = level of precision (marginal error) in this study at 7%

$$n = \frac{2312}{1 + 2312(0.07)^2} = \sim 187$$

Although the study was designed carefully and strict supervision of the data collection process was applied, adding some contingency to overcome the effect of none-response rate in survey studies is crucial. Therefore, after adding a none-response rate 10%, the final sample size used for this study was 205.

2.3.7. Sampling technique

A multi-stage sampling design was used in the study to look into how amenities affected Addis Ababa's real estate market values. In the first stage Four target sub-cities Bole, Kirkos, Nefas Silk-Lafto, and Lemi Kura were chosen from the eleven sub-cities using a Simple Random Sampling (SRS) technique .The Addis Ababa Trade Bureau (2025) reports that there are 996 registered developers in these four sub cites , divided as follows: Bole (432), Kirkos (321), Nefas Silk-Lafto (123), and Lemi Kura (120). Five developers (Nassew, Noah, Ayat, Gift, and Enyi) were chosen Based on their experience, professional background, availability of the data, willingness of the companies and involvement in Addis Ababa's real estate market in the second stage using a Purposive Sampling technique from the 996 active developers within the four selected sub-cities.

Then, the selected real estate's last seven years house delivery to their client record was identified. According to their recent record Nassew delivered 305, *Noah delivered* 823 houses, Gift delivered 361, Ayat delivered 406, and Enyi delivered 417 houses at the selected locations. Then in the second step, the sample size was proportionately allocated based on the recent house delivery report; and then individual buyers were selected using simple random sampling technique (**Fig. 2**).

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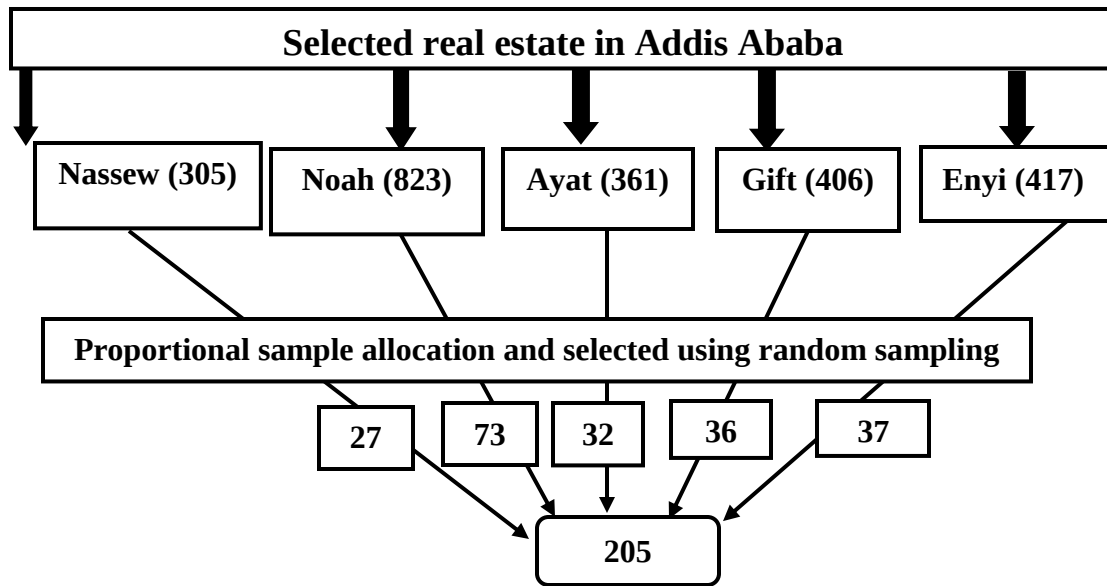


Figure 8: Schematic presentation of the sampling procedure to assess Amenities and Their Influence on the Real Estate Value: The Case of Addis Ababa City, 2025

The study employed a proportional sample allocation from each selected real estate to ensure that the samples were distributed according to their market share. The proportional sample for each real estate was calculated by taking their specific contribution to the total property delivery (2,312) and applying it to the total sample size (205). For example, for Noah real estate the number of samples required is calculated by multiplying the total sample size (205) by the ratio of Noah's delivered houses (823) to the total population (2,312). This is calculated as: $(823 \div 2,312) \times 205 = 72.97$. Since the number of samples must be a whole number, it is rounded to 73. The same calculation was applied for the remaining real estates as shown in shown in the schematic presentation in Figure 2

2.4. Data collection methods

2.4.1. Data collection tool

For this study, both primary and secondary data were used. Primary data were collected from buyers and developers using structured interviewer administered questionnaire (survey) and key informant interview guide, respectively. The tool comprises background variables including age, gender, income, occupation, experience of purchasing from real estate, and source of financing. The importance of amenities including security services, parking space, proximity to schools,

access to public transport, shopping centers and markets, healthcare facilities, green spaces and parks, gym and recreational centers, road infrastructure and accessibility, and water supply and utilities in purchasing decision was included. The tool also comprises amenity preferences, satisfaction, and property values. Key informant interview guide was prepared for the qualitative part. In addition, existing records and reports of real estate transaction data, property price indices, urban development plans, and demographic statistics from government offices and real estate companies were used as secondary data sources.

2.4.2. Data collection procedure

The tool for the quantitative part was organized using KOBO toolbox for electronic data collection. The tool was pretested on 5% of the sample before applied to the actual data collection. Three data collectors and a supervisor were hired for the data collection and they received adequate training about the purpose and objectives of the study, and the data collection using KOBO toolbox.

The data for the qualitative part was collected using a semi-structured interview guide and collected using tab recorder and notes book. The reliable secondary data was collected by analysis of government reports, and real estate company publications to supplement primary data.

2.5. Study variables

The real estate property price per square meter was the outcome/dependent variable (continuous variable) for this study. In addition, the independent variables of the study were arranged in themes including Availability of amenities: security services, parking space, proximity to schools, access to public transport, shopping centers and markets, healthcare facilities, green spaces and parks, gym and recreational centers, road infrastructure and accessibility, and water supply and utilities.

2.6. Operational Definitions

Real estate price: this is the market value of the property, which is the dependent variable of this study is a continuous variable, operationalized as the price per square meter (ETB/m²) reported by the buyers at the time of transaction (Mekuria *et al.*, 2024).

Amenities: are the good-to-have features in a real estate that add additional comfort and enjoyment, which in turn increases the marketability, value, and investment potential (Conte, 2023). In this study availability and proximity of to the real estate was assessed. Amenities such as security services, parking space, nearby schools, access to public transport, shopping centers and markets, healthcare facilities, green spaces and parks, gym and recreational centers, road infrastructure and accessibility, and water supply and utilities were assessed using a yes/no questions.

2.7. Data quality control

To ensure data quality, the data collection team received both theoretical and practical training about the purpose of the study and the data collection procedure. Furthermore, the data collection tool was pretested, and amendments were made as needed. Furthermore, the supervisors monitored the entire data collection process regularly throughout the study period. The investigators double-checked the information's consistency once the data collectors send the data. Then, complete forms were downloaded as an excel file and imported to SPSS for analysis.

2.8. Methods of Data Analysis

2.8.1. Quantitative Data Analysis

Once the data collection is complete, the final data set was downloaded as an excel file from the KOBO toolbox and imported into Stata version 17 for analysis. Data cleaning, coding, and recoding were done before the actual analysis.

Descriptive statistics: Frequency with percentage and means with standard deviation (SD) were used to present categorical and continuous variables, respectively. Inferential statistics: One-way Analysis of Variance (ANOVA) was used to identify differences in property value among groups with different independent variables. Moreover, simple and multiple linear regression were computed to assess how various types of amenities including schools, parks, healthcare influence on property prices while controlling for other factors such as location and property characteristics. The simple linear regression model was computed with the following equation 1.

$$Y = \beta_0 + \beta_1 X + \varepsilon \quad (1)$$

Where **Y** is the dependent variable measured in the average property price in meter square; **X** is each independent variables or the perceived distance between the real estate property and each

amenities in the context of this study; β_0 is the intercept; expected value of Y where X is zero; β_1 is the slope coefficient; change in unit price in every (Y) change in the independent variables (X); and ϵ is the error term that represent unexplained variations.

Furthermore, the multiple linear regression was computed following equation 2.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \epsilon \quad (2)$$

Where **Y** is the average property price in meter square; **X1 to Xk** are the independent variables, β_0 = the intercept; β_1 to β_k are partial regression coefficients, and ϵ is the random error. The final regression model was presented in equation 3 below.

$$\begin{aligned} Y^{\wedge} = & 34100.94 + 7715.71SS + 2135.67PS + 5012.78NS + 5015.36APT) - \\ & 870.08SCM + 4290.13HF + 2518.55GSP + 2512.88GRC + 3073.34RIA + \\ & 2805.71WSU \end{aligned} \quad (3)$$

Where, $Y^{\wedge}$ = Predicted property price, and the predictors including **SS** = security service, **PS** = parking space, **NS** = nearby school, **APT** = access to public transport, **SCM** = shopping centers and markets, **HF**, health facilities, **GSP** = green space and parks, **GRC** = gym and recreational centers, **RIA** = road infrastructure and accessibility, and **WSU** = water supply utilities

Finally, the linear regression assumptions: multicollinearity, linearity of variables, normality, and homoscedasticity were tested using the variance inflation factor (VIF), scatterplots, histogram, and the **Cook–Weisberg test**, respectively. Variables with a p-value of ≤ 0.25 in unadjusted analysis were included in the final model. Statistical significance was declared at a P-value of < 0.05 .

2.8.2. Qualitative Data Analysis

The key in-depth interviews collected from the real estate developers were transcribed verbatim by the investigators and his assistance. Then the data were analyzed using thematic analysis approach. Each line of the narrative was read and the texts were divided into sections. Each section was labeled with a codeword or phrase that conveyed the meaning of the section. The codes with a common meaning were grouped into subthemes, which were in turn combined to form themes. An independent coder, who has experience in qualitative data analysis, was used to ensure trustworthiness. Credibility, dependability, *confirmability*, and credibility of the data were ensured through audiotaping the interviews, more experienced coder, using participants' own words to describe phenomena, and through member checking, respectively. Finally, the findings

were triangulated with the quantitative findings to ensure the validity and consistency of results across different data sources and methods.

2.9. Ethical Consideration

Ethical approval for this study was obtained from the department of Urban Land and Property Valuation, Addis Ababa University. Moreover, permission was obtained from each real estate developers before the commencement of the study. The rights of the participants for this study was protected and respected; they received a clear information about the purpose of the study, the right to participate voluntarily, the right to ask questions, the right to stop responding at any time during the interview, and the right to choose not to respond to any questions. Furthermore, the information received from the respondents kept confidential and do not shared to any third party.

3. Results and Discussion

3.1. Importance of amenities on property value

Table 15: Descriptions of participants view on the importance of amenities on property value

Variable	Not important N, (%)	Somewhat important N, (%)	Neutral N, (%)	Important N, (%)	Very important N, (%)
Security services	9 (4.39)	2 (0.98)	28 (13.66)	41 (20.00)	125 (60.98)
Parking space	11 (5.37)	15 (7.32)	40 (19.51)	51 (24.88)	88 (42.93)
Proximity to Schools	14 (6.83)	1 (0.49)	44 (21.46)	60 (29.27)	86 (41.95)
Access to public transport	10 (4.88)	14 (6.83)	30 (14.63)	57 (27.80)	94 (45.85)
Shopping centers & markets	15 (7.32)	7 (3.41)	24 (11.71)	58 (28.29)	101 (49.27)
Healthcare facilities	10 (4.88)	6 (2.93)	38 (18.54)	51 (24.88)	100 (48.78)

Variable	Not important N, (%)	Somewhat important N, (%)	Neutral N, (%)	Important N, (%)	Very important N, (%)
Green spaces & parks	11 (5.37)	13 (6.34)	56 (27.32)	58 (28.29)	67 (32.68)
Gym & recreational centers	16 (7.92)	29 (14.36)	47 (23.27)	61 (30.20)	49 (24.26)
Road infrastructure & accessibility	16 (7.80)	5 (2.44)	13 (6.34)	29 (14.15)	142 (69.27)
Water supply & utilities	11 (5.37)	7 (3.41)	4 (1.95)	29 (14.15)	154 (75.12)

The participants view about the importance of amenities on property value was asked in a five-point Likert scale questions and presented in table 3. Among the sample respondents, three-fifth, 125 (60.98%) reported that availability of security services around the real estate is very important for property value. Parking space around the real estate is another key amenity valued by customers as 88 (42.93%) of the respondents responded that parking space is very important to increase the real estate value. Of the participants, 60 (29.27%), and 86 (41.95%) reported that proximity to schools is important and very important, respectively, to improve the real estate value. Nearly half, 94 (45.85%) of the respondents reported that access to public transport to the real estate is very important to increase the property value. Likewise, 101 (49.27%) reported that access to shopping centers and markets around the real estate is very important and increases the property value. Moreover, 100 (48.78%), 67 (32.68%), and 49 (24.26%) of the sampled respondents mentioned that availability of healthcare facilities, green spaces and parks, gym and recreational centers around the real estate is very important for property value, respectively. Furthermore, 142 (69.27%), and 154 (75.12%) reported that road infrastructure and accessibility, and availability of water supply and utilities around the real estate is very important and increase the value of the real estate, respectively (Table 1).

3.2. Property value change overtime

Table 16: Description of real estate property value change overtime.

Variable	Frequency	Percent
Have you experienced an increase in property value since purchase?		
Yes	105	51.22
No	100	48.78
Total	205	100.00
What do you believe contributed most to the increase property value?		
Improved infrastructure	43	20.98
Proximity to new Amenities	43	20.98
Demand in the area	47	22.93
Generate economic growth	47	22.93
Government policies	25	12.20
Total	205	100.00
Would you be willing to pay more for a property with enhanced amenities?		
Yes	96	46.83
No	109	53.17
Total	205	100.00
By what percentage do you think amenities contribute to price		
<10%	26	12.68
10-20%	118	57.56
21-30%	56	27.32
>30%	5	2.44
Total	205	100.00
Would you consider buying another real estate property in Addis Ababa?		

Yes	170	82.93
No	30	14.63
Not sure	5	2.44
Total	205	100.00
What additional amenities would you prioritize in a future purchase?		
Smart home features	36	17.56
High speed internet	14	6.83
Community space	55	26.83
Childcare facilities	48	23.41
Sustainable energy source	43	20.98
Other	9	4.39
Total	205	100.00

Over half of the participants, 105 (51.22%), reported that the value of the property was increased after they purchased. Participants also reported the most contributing factors for the increment as improved infrastructure (43, 20.98%), proximity to new amenities (43, 20.98%), increased demand in the area (47, 22.93%), generated economic growth (47, 22.93%), and government policies 25 (12.20%). Among the sampled respondents, 96 (46.83%) reported as they are willing to pay more for a property with enhanced amenities. In addition, 118 (57.56%) of the participants think that amenities contribute to a 10-20% price increment, and five (2.44%) think that amenities contribute for over 30% price increment on property value of the real estate. Furthermore, most, 170 (82.93%), of the participants considered buying another real estate property in Addis Ababa. However, in their future purchase they prioritize the following additional amenities: smart home features (36, 17.56%), high-speed internet (14, 6.83%), community space (55, 26.83%), childcare facilities (48, 23.41%, sustainable energy source (43, 20.98%), and other (9, 4.39%) (Table 2).

3.3. Satisfaction with amenities around the real estate

Table 17: Respondents satisfaction with the amenities around the real estate (n = 205)

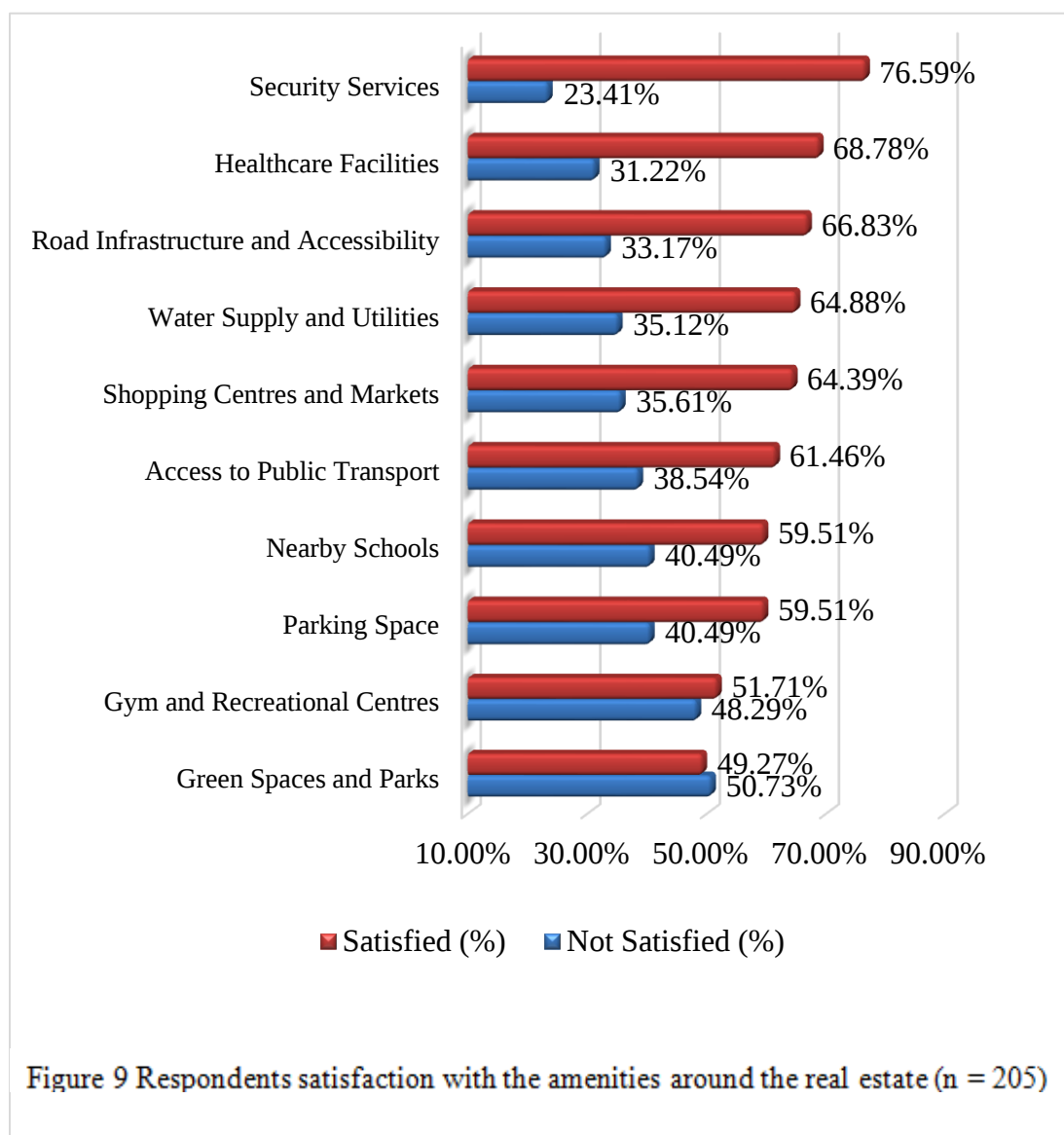
Variable	Very dissatisfied N, (%)	Dissatisfied N, (%)	Neutral N, (%)	Satisfied N, (%)	Very satisfied (%)
Security services	13 (6.34)	2 (0.98)	33 (16.10)	83 (40.49)	74 (36.10)
Parking space	21 (10.24)	8 (3.90)	54 (26.34)	58 (28.29)	64 (31.22)
Nearby schools	11 (5.37)	14 (6.83)	58 (28.29)	56 (27.32)	66 (32.20)
Access to public transport	11 (5.37)	30 (14.63)	38 (18.54)	69 (33.66)	57 (27.80)
Shopping centers & markets	16 (7.80)	15 (7.32)	42 (20.49)	58 (28.29)	74 (36.10)
Healthcare facilities	16 (7.80)	25 (12.20)	23 (11.22)	72 (35.12)	69 (33.66)
Green spaces & parks	22 (10.73)	37 (18.05)	45 (21.95)	61 (29.76)	40 (19.51)
Gym & recreational centers	22 (10.73)	37 (18.05)	40 (19.51)	69 (33.66)	37 (18.05)
Road infrastructure & accessibility	11 (5.37)	20 (9.76)	37 (18.05)	68 (33.17)	69 (33.66)
Water supply & utilities	15 (7.32)	31 (15.12)	26 (12.68)	60 (29.27)	73 (35.61)

Sampled respondent's satisfaction with the amenities around the real estate property was asked in a five-point Likert scale question (1 very dissatisfied to 5 very satisfied and presented in table 5. Among the sample respondents, 74 (36.10%) and 83 (40.49%) were very satisfied and satisfied with the availability of security services around the real estate. Among the participants, 58 (28.29%) and 64 (31.22%) were satisfied and very satisfied with the parking space. Of the

participants, 56 (27.32%) and 66 (32.20%) were satisfied and very satisfied by the nearby schools in relation to the real estate.

Over a quarter, 57 (27.80%), of the respondents were very satisfied with the availability of public transport to the real estate. Similarly, over one-third 74 (36.10%) were very satisfied with the availability of shopping centers and markets around the real estate. In addition, 69 (33.66%), 40 (19.51%), and 37 (18.05%) of the sampled respondents were satisfied with the availability of healthcare facilities, green spaces and parks, gym and recreational centers around the real estate, respectively. Moreover, 69 (33.66%), and 73 (35.61%) of the sampled respondents were satisfied with the road infrastructure and accessibility, and availability of water supply and utilities around the real estate, respectively (Table 5).

Figure 3 presents the description of respondents' satisfaction with the amenities around the real estate. The first three categories (very dissatisfied, dissatisfied and neutral) were categorized in one group and labeled as not satisfied and the next two categories (satisfied and very satisfied) as the other category and labeled as satisfied. The graph presented respondents satisfaction in descending order as security services (76.59%), healthcare facilities (68.78%), and road infrastructure and acceptability (66.83%) took top priorities for customers' satisfaction (Figure 3).



3.5. Status of property value

Table 18: Detail description of the outcome variable (price per square meter)

Real estate price per square meter

Percentiles	Smallest			
1%	63000	63000		
5%	63000	63000		
10%	69000	63000	Observations	205
25% (1 st quartile)	74000	63000	Sum of weight	205

Real estate price per square meter

50% [<i>Median</i>]	80000	Mean	83009.76	
	Largest	Std. dev.	12835.68	
75% (<i>3rd quartile</i>)	90000	110000		
90%	103000	110000	Variance	1.65e+08
95%	105000	110000	Skewness	.4453972
99%	110000	110000	Kurtosis	2.133

In addition, the median price of the real estate was 80,000 birrs with an (Inter quartile range (IQR) of and 16,000 birr and the minimum and maximum value of 63,000 and 110,000, respectively. In addition, the 1% up to the 99% percentile of the price was presented in Table 5.

3.6. Real estate price by location

Table 19: Mean difference of real estate value by location and one-way ANOVA

Location of real estate	Summary of Price per Sqm.		
	Mean	SD	Frequency
Bole	93800	7647	40
CMC	78754	6234	69
Jemo	71422	5682	64
Kazanchis	101875	4963	32
Total	83010	12836	205

<i>One-way Analysis of variance (ANOVA)</i>					
Sources	SS ^a	df ^b	MS ^c	F ^d	Prob > F ^e
Between groups	2.5890e+10	3	8.6299e+09	224.68	0.0000
Within groups	7.7203e+09	201	38409557.1		
Total	3.3610e+10	204	164754806		

Bartlett's equal-variances test: $\chi^2(3) = 7.4699$ Prob> $\chi^2 = 0.058$

Footnotes

^aSum of Squares, a measure of total variation in the data that shows how much the individual prices deviate from the overall mean.

^bDegrees of Freedom: the number of independent values that can vary in the analysis. For between groups: number of groups $- 1 = 4 - 1 = 3$ and for within groups: total observations $-$ number of groups $= 205 - 4 = 201$.

^cMean Square: The average variation, obtained by dividing SS by its corresponding df.

^dF-statistic: A ratio of between-group variance to within-group variance. A higher F-value indicates greater differences between group means.

^ep-value: The probability of obtaining such an F-value if the null hypothesis (no mean difference) were true.

As presented in table 6, there is significant variation in the mean price of the real estate across different locations. The mean price is highest in Kazanchis, with a mean price of $101,875 \pm 4963$ birr, followed by Bole ($93,800 \pm 7647$). On the other hand, the lowest price was recorded in Jemo with a mean with SD price of $71,422 \pm 5682$ Ethiopian birr.

In addition to the descriptive statistics, the one-way ANOVA was further computed, and the result, as presented in table 8, showed that there was statistically significant difference in real estate prices among locations $F(3, 201) = 224.68$, $p < 0.001$. Real estate located in Bole and Kazanchis had higher mean prices compared to those in CMC and Jemo. The assumption of equal variances was not violated, Bartlett's $\chi^2(3) = 7.47$, $p = 0.058$. These findings suggest that location was a strong determinant of real estate value in the study area (Table 7).

3.7. Real Estate Price by Company

Table 20. Mean difference of real estate value by company name and ANOVA table.

Location of real estate	Summary of Price per Sqm.		
	Mean	SD	Frequency
Ayat	101875	4963	32
Eniy	72649	6019	37

Location of real estate	Summary of Price per Sqm.		
	Mean	SD	Frequency
Gift	76639	5602	36
Nassew	69741	4793	27
Noah	88041	9445	73
Total	83010	12836	205

<i>One-way Analysis of variance (ANOVA)</i>					
Sources	SS ^a	df ^b	MS ^c	F ^d	Prob > F ^e
Between groups	2.3424e+10	4	5.8559e+09	114.98	0.0000
Within groups	1.0186e+10	200	50931499.4		
Total	3.3610e+10	204	164754806		

Bartlett's equal-variances test: $\chi^2(4) = 31.7227$ Prob> $\chi^2 = 0.000$

Table 7 presents the mean real estate price by the developer name. The mean price is highest in Ayat, with a mean price of 101875 ± 4963 birr, followed by Noah (88041 ± 9445). On the other hand, the lowest price was recorded in Nassew with a mean and SD price of $69,741 \pm 4793$ Ethiopian birr.

The ANOVA was further computed, and the result as presented in table 9 showed that there was a statistically significant difference in real estate prices among companies' $F(4, 200) = 114.98$, $p < 0.001$. Real estate located in Ayat and Noah had higher mean prices compared to those in Eniy, Gift, and Nassew. The assumption of equal variances was violated, Bartlett's $\chi^2(4) = 31.7227$, $p < 0.001$. These findings suggest that the Real Estate Developer Company was not a strong determinant of real estate value in the study area; rather, other factors such as amenities around the area could contribute to this variation (Table 8).

3.8. Influence of Amenities on Real Estate Price

3.8.1. Simple linear regression (SLR), unstandardized coefficients

Table 21. Simple linear regression that assess the influence of amenities on real estate prices

Amenities	Unstandardi zed β coefficient	Std. err.	T	P>t	95% CI	
					LL	UL
Security services	18987.83	1692.489	11.22	<0.001	15650.72	22324.94
Constant	49294.78	3087.032	15.97	<0.001	43208.02	55381.54
Parking space	9734.794	1798.021	5.41	<0.001	6189.603	13279.99
Constant	66674.3	3131.937	21.29	<0.001	60499.00	72849.60
Nearby schools	17315.11	1522.198	11.38	<0.001	14313.77	20316.46
Constant	53700.76	2670.6	20.11	<0.001	48435.09	58966.43
Access to public transport	13951.11	1833.772	7.61	<0.001	10335.42	17566.79
Constant	58578.3	3307.74	17.71	<0.001	52056.37	65100.24
Shopping centers and markets	11628.09	1911.919	6.08	<0.001	7858.32	15397.86
Constant	62646.42	3448.701	18.17	<0.001	55846.55	69446.29
Healthcare facilities	17096.41	1681.15	10.17	<0.001	13781.65	20411.16
Constant	53153.59	3025.614	17.57	<0.001	47187.93	59119.26
Green spaces parks	12042.05	1663.37	7.24	<0.001	8762.353	15321.75
Constant	63331.28	2833.808	22.35	<0.001	57743.81	68918.75
Gym & recreational centers	9462.205	1692.665	5.59	<0.001	6124.745	12799.67
Constant	68101.01	2795.118	24.36	<0.001	62589.83	73612.2
Road infrastructure & accessibility	18590.91	1757.46	10.58	<0.001	15125.69	22056.13
Constant	49818.18	3219.606	15.47	<0.001	43470.02	56166.34

Amenities	Unstandardized β coefficient	Std. err.	T	P>t	95% CI	
					LL	UL
Water supply & utilities	19341.4	2070.791	9.34	<0.001	15258.38	23424.42
Constant	47346.1	3891.603	12.17	<0.001	39672.95	55019.25

In this study, the influence of amenities on real estate price was assessed using both simple and multiple linear regression (Table 10 and 11). This method of analysis allows us to investigate the influence of each amenity available around the real estate on real estate prices. It showed both the strength and direction of the relationship between real estate price and each additional amenity, which allows us to predict the price change of the real estate under different conditions. . To overcome problems in the real estate sector, such analysis results are essential for various stakeholders, such as buyers, developers, and urban planners.

As presented in table 10, the influence of common amenities on the real estate price per square meter was assessed. Although the results were presented in one table, the simple linear regression analysis was carried out independently for each explanatory variable, each amenity, in this case. The simple linear regression analysis demonstrated that the availability of security service around the real estate had a strong positive relationship with the real estate price and increased the prices by approximately 19,000 Ethiopian birr ($\beta = 18987.83$, $P = <0.001$).

There is strong and positive relationship between parking space and the price of the real estate as a unit proximity of the real estate to the parking space increase the price per square meter by ~10,000 birr ($\beta = 9734.794$, $P = <0.001$). Likewise, proximities to amenities such as nearby schools ($\beta = 17315.11$, $P = <0.001$; shopping centers and markets ($\beta = 11628.09$, $P = <0.001$); healthcare facilities ($\beta = 17096.41$, $P = <0.001$); green spaces parks ($\beta = 12042.05$, $P = <0.001$), gym and recreational centers ($\beta = 9462.205$, $P = <0.001$), road infrastructure & accessibility ($\beta = 18590.91$, $P = <0.001$), and water supply and utilities ($\beta = 19341.4$, $P = <0.001$) had strong and positive relationship with price of the real estate and increase its value about 9462.21 to 19,341.40 Ethiopian birr per square meter (Table 10).

3.8.2 Multiple linear regression (MLR), standardized coefficients

Table 22. Multiple linear regression that assess the influence of amenities on real estate prices

Sources	SS	Df	MS	Number of obs = 205		
Model	1.8227e+10	10	1.8227e+09	F (10, 194)	=	22.99
Residual	1.5383e+10	194	79294425.5	Prob > F	=	0.0000
Total	3.3610e+10	204	164754806	R-squared	=	0.8423
				Adj R-squared	=	.8187
				Root MSE	=	8904.7

Variables /Amenities	Standardized β Coefficient	Std. err.	T	P>t	95% conf. interval	
					LL	UL
Security service	7715.71	2578.99	2.99	0.003**	2629.25	12802.17
Parking space	2135.67	1197.23	1.78	0.076*	-225.59	4496.94
Nearby schools	5012.78	1422.39	3.52	<0.001***	2207.45	7818.12
Access to public transport	5015.36	1207.64	4.15	<0.001***	2633.57	7397.15
Shopping centers and markets	-870.08	1154.33	-0.75	0.452	-3146.72	1406.57
Healthcare facilities	4290.13	1424.22	3.01	0.003**	1481.19	7099.07
Green spaces and parks	2518.55	1322.05	1.91	0.058*	-88.88	5125.99
Gym and recreational centers	2512.88	1236.94	2.03	0.044**	73.31	4952.46
Road infrastructure & accessibility	3073.34	2190.57	1.40	0.162	-1247.05	7393.74
Water supply &	2805.71	2078.17	1.35	0.179	1292.99	6904.42

Variables /Amenities	Standardized β Coefficient	Std. err.	T	P>t	95% conf. interval	
					LL	UL
utilities						
Constant	34100.94	2634.76	12.94	0.000	28904.49	39297.38

*significant at $P < 0.1$ ** $P < 0.005$ *** $P < 0.001$

In this study, the MLR was computed in addition to the SLR. The MLR allows us to examine the simultaneous effects of multiple amenities on the real estate prices (Montgomery *et al.*, 2021). MLR also controls the effects of confounding variables, which distort the relationship between the outcome and independent variables (Frost, 2019). On the contrary, the SLR may introduce biased and misleading results due to a lack of assessing the joint effects of the predictors (Field, 2024).

As presented in table 11, the MLR analysis was computed to examine the influence of different amenities on the price of real estate. The regression model was run using 205 independent observations, and the summary result showed that the model was significant with $F(10, 194) = 22.99$, $p < .001$, which indicates that predictors (different amenities) jointly explained a significant portion of the variance in the real estate price (outcome variable). As displayed in the table 84.2% of the total variance ($R^2 = .8423$, adjusted R^2 of .8187) in the real estate price can be explained by variation in the amenities. As consistently explained by scholars (Field, 2024; Frost, 2019; Montgomery *et al.*, 2021), a higher R^2 above 0.84 indicates a strong model fitness, and the proportion of variability in the dependent variable was explained well by this MLR model.

The ANOVA table also showed that the SS was remarkably higher than the residual SS, which showed the explanatory variables significantly contribute to explaining the variation in the outcome. As this model was well fit, the real estate developers and urban development planners should consider the relationship between each amenity and the real estate price.

After adjustment for other amenities using the MLR, security services, nearby schools, access to public transport, healthcare facilities had strong and positive relationship with the real estate price at p value of < 0.005 . Security service around the real estate increase the price per square

meter by nearly 8,000 birrs ($\beta = 7715.71$, $P = 0.003$). Similarly, availability schools nearby the real estate ($\beta = 5012.78$, $P = 0.001$), access to public transport ($\beta = 5015.361$, $P = <0.001$), access to healthcare facilities ($\beta = 4290.13$, $P = 0.003$), access to gym and recreational centers ($\beta = 2512.88$, $P = 0.044$) were strongly and positively influence the real estate price ranged from 4000 to over 5000 birrs. Furthermore, availability of parking space ($\beta = 2135.67$, $P = 0.076$) and green spaces and parks ($\beta = 2518.55$, $P = 0.058$) around the real estate positively influences the real estate price at p value < 0.1 (**Table 11**).

3.9. Real estate property value from the developer's perspective

Overview of the Participants and the Real Estate

Table 10. Descriptive summary of the real estate developers

Variables	Name of the real estate				
	Ayat	Eniy	Gift	Nassew	Noah
Age	85	45	41	60	70
Gender	Male	Female	Male	Male	Male
Educational level	Masters	Masters	PhD	Masters	PhD
Business income/per month in birr	>100,000	>100,000	50-100,000	50,000-100,000	>100,000
Occupation	Developer	Private Employee	Private Employee	Developer	Developer
How long have you been In real estate industry?	>10 years	>10 years	> 10 years	>10 years	>10 years
What type of real estate Development s do you focus on?	Mixed use	Mixed use	Commercial	Mixed use	Commercial

Variables	Name of the real estate				
	Ayat	Eniy	Gift	Nassew	Noah
Sources of financing	Investor funding	Personal capital Bank loan	Personal capital Bank loans Investor funding	Personal saving Investment funding	-
Price of the properties per meter square.	110,000 sqm.	89,000	70-94000 (based on location)	82,000	150,000
Importance of amenities	Very Important	Very Important	Very important	Very Important	Important/V . important
Include attitudinal amenities to attract customers	Yes	Yes	Yes	Yes	Yes
Additional amenities planned	High speed internet	Community spaces	Community spaces	Smart home features	Childcare facilities
Influence of amenities on properties price	>30%	>20%	>30%	>20%	>30%

The in-depth interviews were conducted with five key-informants (KIs) from five real estate companies located in Addis Ababa: Ayat, Eniy, Gift, Nassew, and Noah. The KIs were purposively selected based experience, professional background, availability of the data, willingness of the companies and involvement in Addis Ababa's real estate market. Four of the five participants were male, and their ages ranged between 41 and 85 years. Regarding their

educational status, two of them hold a doctor of philosophy (PhD), and the remaining three are master's holders. Three of them were part of the developers from the outset, and two of them (KIs from Eniy and Gift) were private employees. All the KIs had over ten years of experience within the real estate company, which helps them to address all the questions raised for them.

Three of the real estate mainly focused on mixed use (residential and commercial) and two companies work mainly for commercial use. The real estates have different sources of financing including investor funding, bank loan and personal savings. Price of the properties are mainly depending on the location and varied from 70,000 per square meter (Gift) to 150, 000 per square meter (Noah) (Table 10).

3.10. Linear regression diagnostics

According to this study, the common linear regression assumptions were checked to confirm the model was valid and reliable. Linearity of variables, independence of observations, and multicollinearity were checked using scatterplots, the Durbin Watson statistic, and VIF, respectively.

Linearity

Table 23. Linearity assumptions check using the point-biserial correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Real. Price	1.000										
(2) security	0.619 (0.000)	1.000									
(3) parking	0.355 (0.000)	0.255 (0.000)	1.000								
(4) school	0.624 (0.000)	0.681 (0.000)	0.356 (0.000)	1.000							
(5) transport	0.471 (0.000)	0.448 (0.000)	0.135 (0.054)	0.448 (0.000)	1.000						
(6) shopping	0.393 (0.000)	0.394 (0.000)	0.256 (0.000)	0.473 (0.000)	0.400 (0.000)	1.000					
(7) healthcare	0.581 (0.000)	0.573 (0.000)	0.270 (0.000)	0.657 (0.000)	0.468 (0.000)	0.468 (0.000)	1.000				
(8) green	0.453 (0.000)	0.368 (0.000)	0.539 (0.000)	0.438 (0.000)	0.242 (0.000)	0.430 (0.000)	0.418 (0.000)	1.000			
(9) gym	0.365 (0.000)	0.272 (0.000)	0.422 (0.000)	0.305 (0.000)	0.122 (0.081)	0.328 (0.000)	0.293 (0.000)	0.495 (0.000)	1.000		
(10) road	0.596 (0.000)	0.801 (0.000)	0.225 (0.001)	0.656 (0.000)	0.441 (0.000)	0.496 (0.000)	0.651 (0.000)	0.417 (0.000)	0.320 (0.000)	1.000	
(11) water	0.548 (0.000)	0.800 (0.000)	0.250 (0.000)	0.617 (0.000)	0.468 (0.000)	0.499 (0.000)	0.583 (0.000)	0.427 (0.000)	0.256 (0.000)	0.823 (0.000)	1.000

The relationship between each predictor (amenity) and the outcome variable (real estate price) should be approximately linear. Montgomery *et al.* (2021) emphasized that linearity is one of the fundamental assumptions in linear regression, and failure to meet it distorts the result. Linearity can be checked using scatter plots. In this study case, the amenities were assessed as dichotomous variables as nearby and away. For such a dataset scholars (Cohen *et al.*, 2013) recommended that the point-biserial correlation to see the linear association. Significant correlation indicated that the predictor/amenities explains variation linearly in the outcome (real estate price) (**Table 10**).

Normality Test

Table 24. Shapiro–Wilk W test for normal data

Variable	Obs	W	V	Z	Prob>z
Residuals	205	0.99139	1.313	0.627	0.26527

In this study, both graphical and statistical methods were applied to check the normality assumptions. First, after running the MLR, the standardized residuals histogram was displayed as shown in Figure 5, which is approximately a bell-shaped distribution without skewness and kurtosis. Moreover, the histogram illustrated that the residuals follow the normal distribution assumptions (Field, 2024). Furthermore, the Shapiro–Wilk test was also computed and presented in Table 13 and showed $W = 0.991$, $z = 0.627$, and $p = 0.265$. As the P-value is above 0.05, the null hypothesis of normality was not rejected and demonstrated that the residuals are normally distributed (Razali & Wah, 2011). This model fulfills both the bell-shaped histogram and the non-significant Shapiro–Wilk result ($p = 0.265$), which indicate that the normality assumption of the residuals is fulfilled (Figure 5 and Table 11).

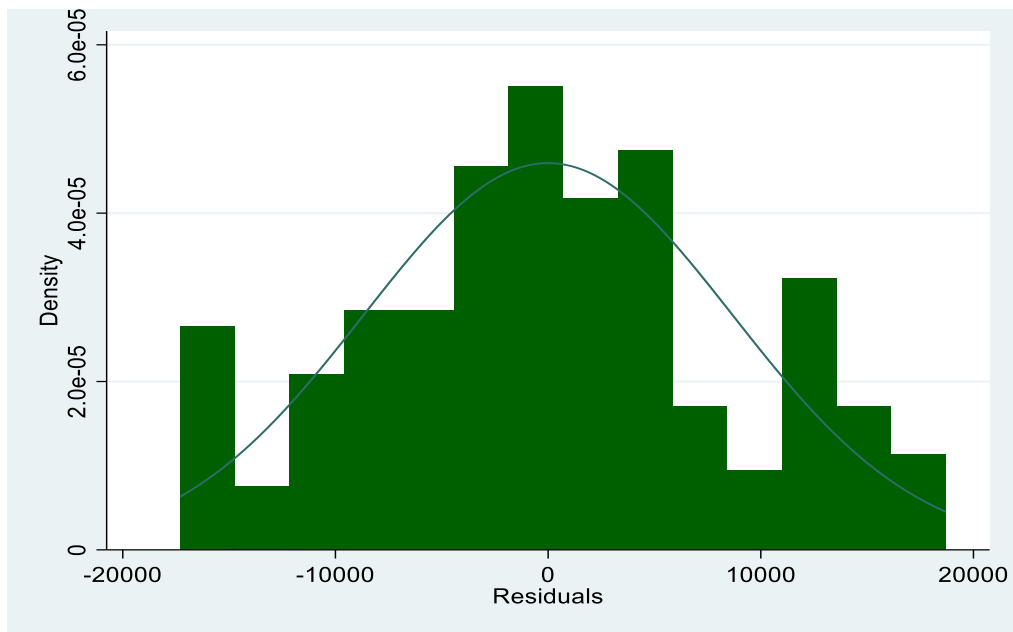


Figure 10. Histogram of the standardized residuals to check for normality

Test of Homoscedasticity

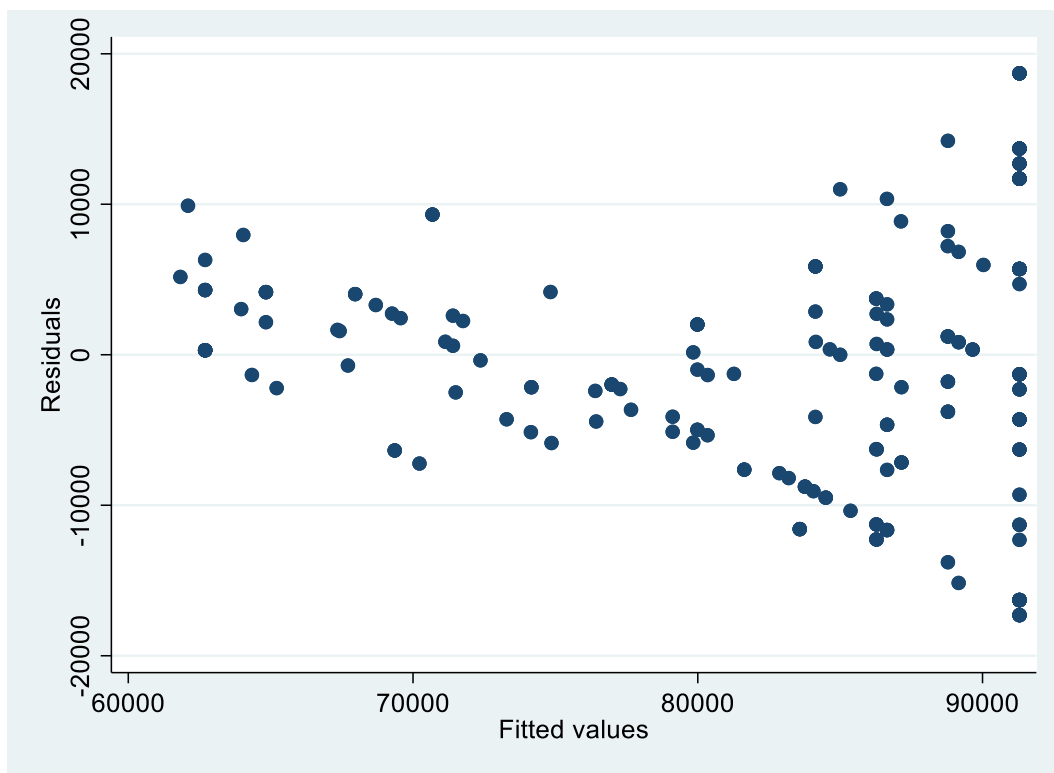


Figure 11. Residuals versus fitted values plot for the multiple linear regression model

In this study, homoscedasticity, which is defined as equal variance of residuals across all predictors/amenities, was examined using scatterplots. The residuals versus predicted (fitted) values of the outcome variable (real estate prices) were plotted as displayed in **Figure 5**. A random scatter of points around the horizontal line around zero indicated that the residuals are constant (Osborne & Waters, 2002). The Cook–Weisberg test was also computed to supplement the visual displayed to statistically assess the presence of heteroscedasticity ($\chi^2 = 29.56$, $P = 0.001$), which indicates the presence of slight heteroscedasticity. To overcome this violation and eliminate biased standard errors, the robust standard errors were applied to correct this violation and improve the reliability of the final model (Breusch & Pagan, 1979).

Multicollinearity

Table 25. Multicollinearity assessment among the predictors included in the final model.

Variables/Amenities	VIF	1/VIF (Tolerance)
Security services	4.37	0.229090
Parking space	4.03	0.247946
Nearby schools	3.85	0.259904
Access to public transport	2.54	0.394013
Shopping centers and markets	2.21	0.453485
Healthcare facilities	1.89	0.529595
Green spaces & parks	1.63	0.613541
Gym & recreational centers	1.54	0.649466
Road infrastructure & accessibility	1.46	0.684526
Water supply & utilities	1.46	0.685731
Mean VIF	2.50	

Multicollinearity, which describes the presence of strong correlations among predictors (Hair *et al.*, 2019). Both Variance Inflation Factor (VIF) and Tolerance were computed in this study to examine the presence of multicollinearity. In this study, mean VIF = 2.50 with a minimum of 1.46 and a maximum of 4.37, which indicates there is no multicollinearity among the predictors included in the final model (Table 14).

In summary, common multiple linear regression assumptions were tested to ensure the validity of the model. The normal distribution assumption was checked using the histogram of residuals and the Shapiro-Wilk test ($p = 0.265$). Minor homoscedasticity was detected using the Cook–Weisberg test and corrected by the robust standard errors. Furthermore, VIF values ranged from 1.46 to 4.37 with a mean VIF of 2.50, which is far below the critical threshold of 10.

4. Conclusions and Recommendations

This is the final chapter that summarizes key findings of the study based on the objectives of the study. Based on the findings, recommendations were forwarded for different stakeholders, including how to overcome the problems.

4.1. Conclusions

The influence of amenities on the real estate property price was assessed among 205 buyers and 5 key informants from five real estate companies: Ayat, Eniy, Gift, Nassew, and Noah. The quantitative investigation found that the average price of the real estate was 83,009.76 ETB per square meter, which is comparable to previous studies. The study also demonstrated that there is a significant variation ($P < 0.001$) based on the location. The average price was higher in Kazanchis with a mean price of 101,875 ETB and lower in Jemo with 71,422 ETB. Moreover, the study reported the buyers' perception about the importance of amenities around the real estate property and their level of satisfaction with them. Availability of security service stations (76.59%), nearby health facilities (68.78%), and road infrastructure and access to transportation (66.83%) were the top amenities with higher satisfaction rate.

The inferential statistics using the multiple linear regression model demonstrated that there is a large variation in the real estate price ($R^2 = 84.23\%$) because of the amenities. Nearby educational facilities, access to public transportation, gym and recreational centers, availability

of parking space and green space independently increase the real estate property value by 5012.78, 5015.36, 2512.88, 2135.67 and 2518.55 ETB per SQM, respectively. This finding indicated that amenities are key influencing factors for the real estate property value and fair distribution of government and private amenities is mandatory to minimize the gap across the city.

The qualitative part of exploration of this study also emphasized that availability and accessibility of amenities are among the top most importance requirements for real estate property valuation and direct impact on the its turnover income. The key informants also raised the challenges of the real estate market as it passes through a lot of difficulties and still in dormant stage due to costly of the row materials, disruption basic infrastructures and amenities. As a solution, they proposed that collaboration with the local administrative bodies, policy makers, and urban planners is crucial to overcome basic amenities deficit at all corners of Addis Ababa city. Furthermore, participating alumni customers in the selection of sites, construction design and other real estate related issues are critical to improve the real estate market and client satisfaction.

4.2. Recommendations

This study showed that amenities are the main determinants of the real estate prices in Addis Ababa. In addition, amenities have significant impact both on buyer's satisfaction and on real estate marks growth. Based on the key findings of this study the following recommendations were forwarded to different stakeholders including buyers, real estate developers, playmakers/urban planners and researchers.

Buyers: As noted in this study, proximity to amenities has significant impact on the real estate price. When deciding to buy either residential or commercial properties, assessing the availability, accessibility and quality of the amenities is equality important with the internal quality of the house such as the location, number of rooms, quality of the materials for construction. They also have to consider the long-term benefits and maximizing returns in the real estate market. Considering availability of security service station, educational facilities, transportation access, healthcare facilities, and access to lifestyle amenities such as gym and recreational centers have imperative to maximize the value of the property in the future.

Real estate developers: To be competitive the real estate developers are expected to work in collaboration with the government and the local administrative to improve the accessibility and quality of the amenities. As pointed by the participants of this study proximity to security service locations such as street lighting and safe public space, proximity to quality schools, parking space, and access to public space enhances the value of the real estate. In addition, as stressed by the purposively selected real estate developer's lifestyle amenities and technologically innovative houses gets popularity particularly by high-income buyers. Therefore, the developers must work to improve the accessibility and quality of the infrastructure and amenities surrounding the real estate to add value on their project.

Policymakers/urban planners: To build prosperous and equitable cities distribution of government amenities as well as improving the quality of existing ones is crucial. For instance, as noted in this study amenities mainly controlled by the government such as security service stations had significant impact on real estate prices. Most of customers (~77.0%) of the alumni were satisfied/very stratified with the availability of security service stations around their property. Therefore, equitable distribution and maintaining the quality of amenities are one of the keys pushing factor to improve urbanization.

Researchers: In this study, the availability of amenities, mainly geographical proximity to the real estates was studied. In addition, the real estate developer's perspective, challenges, and their future strategic responses were extensively addressed. However, the effect of the internal quality of the amenities on the real estate price was not addressed. As the real estate market is influenced by several interlinked factors further study including both the internal and external factors, supporting with qualitative exploration of the barriers is mandatory. Hence, scholars with similar interest should consider the quality of the amenities rather than merely focusing on the physical proximity.

Author Contributions

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Author 1: Habtamu Misganaw Chanie (Postgraduate Student)

- Contributed to the conception and design of the study, the acquisition of data, or the analysis and interpretation of data
- Drafted the article or critically revised its important intellectual content
- Approved the final version submitted

Author 2: Teshome Tefera² (Ph.D., Assistant Professor)

- Contributed to the conception and design of the study, the analysis and interpretation of data
- Drafted the article or critically revised its important intellectual content
- Approved the final version submitted

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