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**DETERMINANTS OF DEVELOPERS PRICING FOR RESIDENTIAL REAL
ESTATE IN NAIROBI METROPOLITAN AREA**

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MBA/102824/2018



**A DISSERTATION FOR MASTER'S DEGREE IN BUSINESS ADMINISTRATION
STRATHMORE BUSINESS SCHOOL**

SEPTEMBER 2021

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made in the dissertation itself.

Signature.....Date 27.10.2021

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Approval

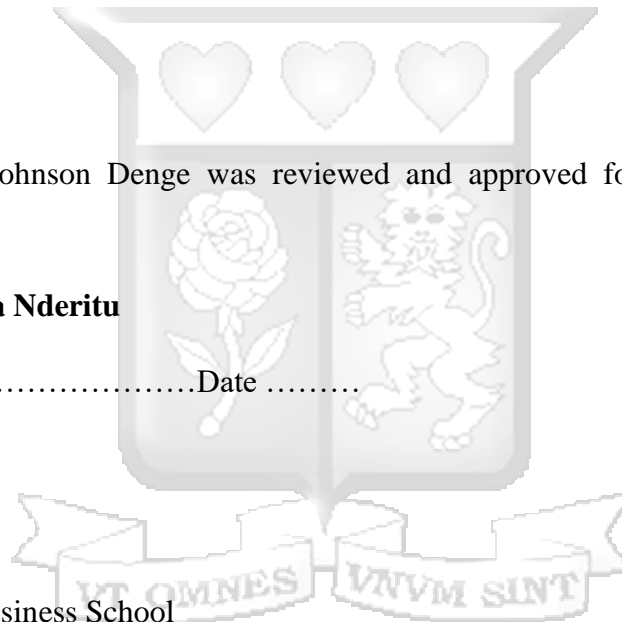
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Dean – Strathmore Business School

SignatureDate



DEDICATION

I dedicate this work to my entire family, for the support and especially for the encouragement and cheering me up throughout the period. The inspiration and spiritual support from my workmates and to my supervisor, for the understanding, patience and guidance.

May God bless you all abundantly!



ACKNOWLEDGEMENT

I'm grateful and highly indebted to many outstanding individuals without whom this work would not have been successful. Special gratitude to the Almighty God for the free provision of care, health, and strength he has accorded me, may abundant glory be to God. I'm deeply indebted to my supervisor for the personal commitment, encouragement, availability, patience and tolerance during the many discussions, which immensely contributed to the success of the dissertation. I sincerely thank my family for accommodating and understanding my position especially when I had to stay away from the family most of the time during the study.

To all of you, may our dear Lord richly bless you!



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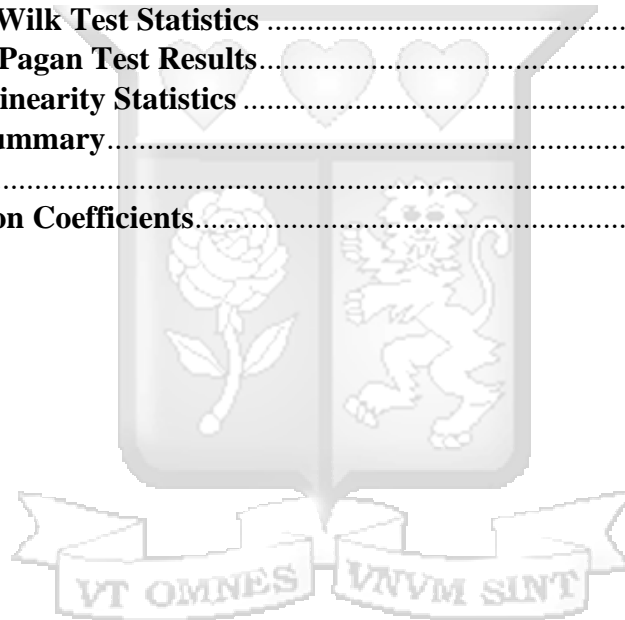
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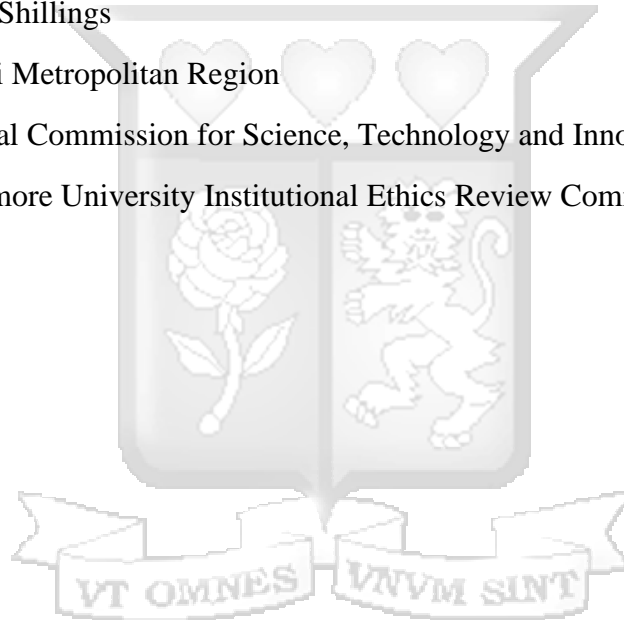
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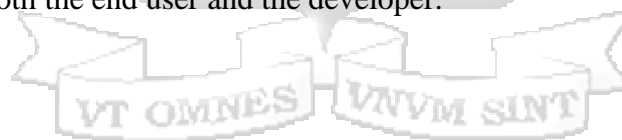
LIST OF ABBREVIATION

CBD	Central Business District
CMA	Capital Markets Authority
GDP	Gross Domestic Product
GOK	Government of Kenya
KNBS	Kenya National Bureau of Statistics
NSE:	Nairobi Securities Exchange
REITS	Real Estate Investment Trusts
SQM	Square Meters
KSHs	Kenya Shillings
NMR	Nairobi Metropolitan Region
NACOSTI	National Commission for Science, Technology and Innovation
SU-IERC	Strathmore University Institutional Ethics Review Committee



ABSTRACT

Real estate prices in the major developed markets have been increasing, sometimes dramatically, over the last decade in both nominal and real terms. This study seeks analyze the determinants of developers pricing for residential real estate in Nairobi Metropolitan Area. It was guided by the following specific objectives; to assess the effects of cost of land on price for residential real estate in Nairobi Metropolitan Area, to analyze the influence of property size on price for residential real estate in the study area, to investigate the influence of location on price for residential real estate in Nairobi Metropolitan Area and to assess the effects of cost of development finance on price for residential real estate in Nairobi Metropolitan Area. It is guided by a number of theories including The Trade Off Theory of Capital Expenditure, Real Estate Market Theory and Hedonic Model of Pricing. This study adopted an cross-sectional research design. The population in this study comprised of the employees or practitioners of the developers and mainly those in charge of pricing in various real estate development firms operating within the metropolis. This researcher employed a census survey, which means all the 75 developers were the respondents for the study. Data used was both from primary and secondary sources. Primary source data was from the firms and institutions with structured questionnaires. Collected and organized was processed to make it useful, that is to turn it into information. The data was analyzed using descriptive and inductive statistics with the use of statistical software MINTAB version 14. Descriptive statistics included measures of central tendency of mean, frequency, standard deviation and percentile. Also used were measures of dispersion presented in tables. A straight-line predictor model was developed. The study achieved 83% response from the population with majority having been in the industry for more than 10 years (42%). On the development portfolio, 48% had their portfolio spent of between Kshs. 501 million to 1 Billion. Cost land, location, cost of finance and zoning regulations explain 41% of variation in residential price index while 59% is accounted for by the other factors considered in the study. It concluded that there is need to strategically control land price through proper valuation methodology and proactive zoning by relevant authorities. Need for infrastructure development, utilities and social amenities and also mechanism for access to affordable credit for both the end user and the developer.



CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Real estate refers to land and anything fixed, immovable or permanently attached to it such as buildings and fences (Makena, 2011). Real estate can be classified as residential or non-residential. Residential housing is a subset of the real estate industry (Brueggeman & Fisher, 2015). The real estate sector has over the years registered substantial growth in terms of its contribution to the Gross Domestic Product. Real estate has therefore become a centre of focus for many investors, both local and foreign. Without standardization, each property is considered to be unique and thus is priced differently (Ruvio, 2018). Because each piece of property is unique, it is often difficult to identify the appropriate variables that will explain the rental prices.

According to Kim and Nelson (2016), assessing the rental value of residential properties is a complex and challenging process to both practitioners and academicians because it involves analyzing the rental property, neighborhood characteristics and market conditions. Further, Odame (2017) clearly mentioned the real estate asset consists of a bundle of attributes including, but not limited to location, but number of bedrooms, gross and lettable floor areas, number of storeys, type of tenure or ownership rights, plot size, quality of aesthetics and accessibility, all of which may affect its rent and price. However, Rameezdeen (2016) see the location as a key factor from customer's point of view. Chris and Somefun (2017) and Nakamura and Crone (2014) explained the attributes includes bedroom, toilet, bathroom, kitchen, open space, drainage, water supply, refuse disposal, good road network, recreational parks, hospital and many more. Raymond (2018) further discussed that a residential property is a multi-dimensional commodity, characterized by durability, structural inflexibility as well as spatial laxity.

Many countries have in the past experienced house price fluctuations. This has been associated with economic instability. In many countries, like the U.S., price fluctuations have led to accelerated housing defaults with millions of residential properties having negative equity mortgages with outstanding loan balances being greater than the property values. House prices are a significant indicator of the real estate market because prices are driven by the demand in the market (Burnside, 2017). House price booms and busts have been observed more frequently in Denmark, Finland, Iceland, Norway, Sweden and in the United Kingdom. Greece and Italy also experienced a rapid rise of house prices in 2017-2018. The increase in real house prices is mainly correlated with the rising cost of land for construction use. Land is a scarce resource, so that its

cost is expected to rise as demand for space suitable for construction purposes rises with the increasing number of households and with higher income.

In Africa a number of factors affect property values. In Nigeria, the key determinants of real estate's prices include population change, change in fashion and taste, institutional factors, economic factors, location, complementary uses, transportation and planning control (Adebanjo, 2016). He stated further that good spread of road network has tendency to increase accessibility with certain areas becoming less accessible as a result of traffic congestion thereby causing value to shift to areas that are accessible. In Ghana, the factors that determine property values include accessibility relative to location-distance of land uses, change in population, change in fashion and taste, institutional factor, economic factor, location, transportation, complementary uses, road transport network, political factor, planning regulation, environmental quality, aesthetics, and growth pattern of land use.

In Kenya, demand for residential real estate continues to outstrip the supply and real estate property market is booming especially because of the growth in the mortgage financing in the country (Maska, 2010). The real estate sector in Kenya is further characterized by ever increasing prices. The reason behind the ever-increasing prices is due to the excess demand for housing units in the country ranging from the residential to commercial houses (Kibunyi, 2017). However, the real estate sector is faced by the ever-increasing slums particular in the urban areas (Koech, 2019). Kenyan real estate property covers all property categories including single and multi-family residential dwellings, commercial and agricultural land, office space, go-dawns and warehouses, retail outlets and shopping complexes (Masika, 2010). The last decade has seen real estate prices increase significantly tempered with occasional slowdowns albeit not drastic across various cities in Kenya. The Hass Property Index developed by HassConsult Limited, a leading real estate agent in Kenya, shows that as at the close of 2013, property values had increased 3.37 times since 2000 (HassConsult, 2014).

Kenya has a large housing gap growing every year at an approximated deficit of 200,000 units per annum, with over 2 million units cumulatively according to World Bank report (2017). This is against a country population growth of 2.6% with an urbanization rate of 4.4%, with most Kenyans being unable to afford houses. Price of residential property as a product thus plays a big part on how it performs in the market on the back of the large deficit. While the market is largely expected to conform to forces of demand and supply, the heterogeneity and lack of a central market make real estate a unique product, especially on pricing.

1.1.1 Real Estate Development Overview in Kenya

Development, pricing and subsequent ownership of real estate in Kenya has been dynamic and occasionally economically volatile while experiencing strong market forces driven by factors such as demand, supply, fiscal environment, cost of land, cost of capital, and other salient factors such as consumer tastes and preferences. From a developer's perspective, other key factors include cost of construction, level of finishes, the size of the unit and the zoning of the area. According to Kenya National Bureau of Statistics, KNBS (2018), the real estate and construction sectors contribution to Gross Domestic Product (GDP) decline to 12,7% in Q2' year 2018 compared to Q1' year 2018. Despite this, the sector continues to significantly affect the Kenyan economy with steady growth over the years.

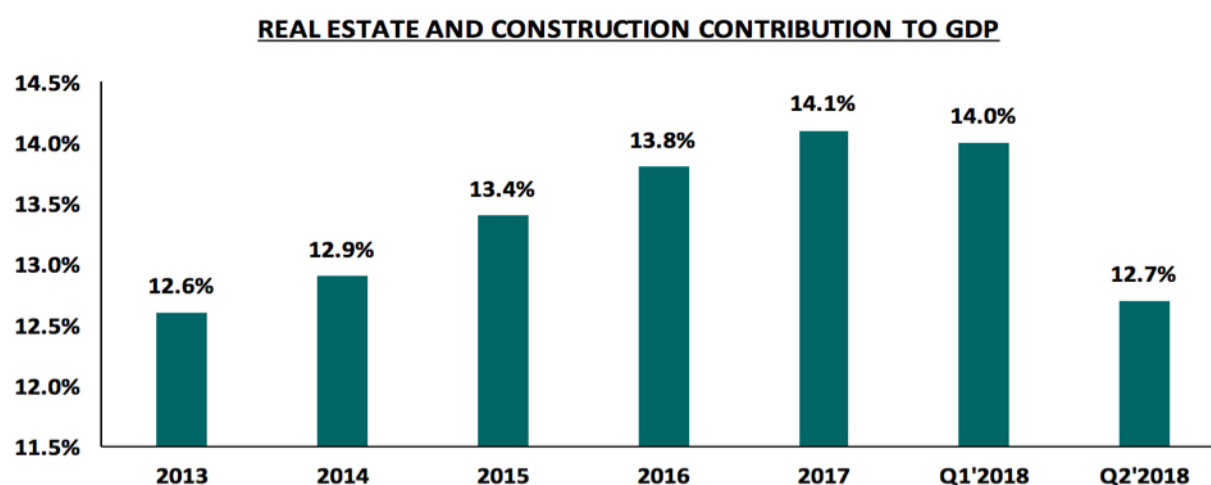


Figure 2.1: Source: Kenya Bureau of Statistics 2018

1.1.1.1 Policies & Legal Framework

A first comprehensive Housing Policy for Kenya was developed in year 1966/67. The policy directed the government to provide the maximum number of people with adequate shelter and a healthy environment at the low cost. At the time, Kenya had a population of just over 9 Million people with the annual housing requirement at 7,600 and 38,000 units in urban and rural areas, respectively. The policy advocated for slum clearance and encouraged mobilization of resources for housing development through aided self-help and co-operative movement efforts. The resultant of the policy was the creation of the Ministry of Housing and conversion of the Central Housing Board to the National Housing Corporation as the main agency for development.

The National Housing Strategy for Kenya 1987-2000 aimed to produce a concrete action plan by which the public and private sectors working together would produce a high volume of acceptable quality housing sufficient to meet the needs of new households.

The National Plan of Action on Shelter and Human Settlements 1995 aimed to address housing through key attention to i) establishment of a capability to collect, analyze data, document and disseminate information regarding the demand and supply of housing, ii) ensure adequate supply of land through simplification of the process of land subdivisions, decentralization of land administration, improved procedures for approvals and survey and eradication of administrative and legal barriers to equitable access to land, iii) regularization of informal settlements, iv) facilitate finance for shelter development and maintenance, v) provision of basic infrastructure and services, and vi) employment of appropriate technology to exploit the use of locally available building material to supply adequate shelter for all.

The National Housing Policy Sessional Paper of 2004

This policy paper sought to facilitate the provision of adequate shelter and a healthy living environment at an affordable cost to all socio-economic groups in Kenya. The government would address the housing shortage through: i) development of urban middle-cost and low-cost housing, ii) upgrading of slums and informal settlements, and iii) provision of rental housing. It also proposed to enact legislation to direct commercial banks, statutory pension funds, insurance companies and similar institutions to invest a percentage of their funds into middle-cost housing development. The policy also advocated for tax incentives, for instance, investment allowances to individuals and institutions who invest directly or through an approved housing finance system in a low-cost development. Other proposals were meant to do the following i) supply serviced land at affordable prices, ii) public-private partnerships for infrastructural development, iii) ensuring that private developers participate in development of infrastructure on a cost-reimbursement basis, iv) increase allocation to research institutions to facilitate research on building materials and technologies, v) amend the Revenue Benefits Authority (RBA) Act to recognize retirement benefits as suitable security for mortgages, vi) to compel banks to give out 5% of their lending portfolio to low cost housing against appropriate collateral, and vii) exemption of first time homebuyers from payment of stamp duty.

The Vision 2030 Medium Term Strategic Plan for 2008-2012 included the following flagship projects;

- i. Preparation of a national land-use plan in order to facilitate better urban planning;
- ii. Installation of the physical and social infrastructure in slums in 20 urban areas to make them formal settlements, permit construction of permanent houses and attract private investments;
- iii. Producing 200,000 housing units annually by 2012 under Private Public Partnerships (PPP) and other initiatives;
- iv. Establishment of housing technology centers in each constituency to increase access to decent housing by promoting location-specific building materials and low-cost housing;
- v. Establishment of a secondary mortgage finance corporation to increase access to housing finance; and
- vi. Enactment of the Housing Bill, 2006 to legislate for a one-stop housing development approvals mechanism to fast track approval of housing plans and reduce the time cost of construction

Affordable Housing as part of Government “Big 4 Agenda”

This is the latest of the initiatives put across by the government. The Jubilee Government has proposed various strategies with the intention of provision of at least 500,000 units of affordable housing during the period between 2018 and 2022. Out of these units, 80% will be affordable houses costing between Kshs 0.8 million and Kshs 3.0 million and 20% will be social housing units costing between Kshs 0.6 million and Kshs 1.0 million, according to the Big 4 Agenda Blueprint. This is expected to be implemented on 7,000 acres in 5 cities, namely Nairobi, Mombasa, Nakuru, Kisumu, and Eldoret. We have looked at these by highlighting the problem and the proposed solutions by the government.

1.1.1.2 The Development Process

The real estate development process is a complex, time-consuming, capital intensive, multi-disciplinary and externality-generating process. William and Brueggeman (1997) define development process as a four or and five step process: Essentially a developer (i) acquires a site, (ii) develops the site and constructs the building improvements, (iii) provides the finish-out and readies the space for occupancy by tenants/users, (iv) manages the property after completion, and (v) may eventually sell the project. This thus show real estate development as the process of making improvement on land for purposes of improving its usefulness and thus value.

According to Tsatsaronis & Zhu, (2013), real estate markets are intrinsically local in character, in the short term, the stock on real estate may be constrained as a result of factors that include length

of planning and construction phases and inertia of existing land planning schemes. This thus shows the significance of understanding the real estate development process and its impact to the overall product outcome.

1.1.2 Residential Real Estates in Nairobi Metropolitan

The Nairobi Metropolitan Area was formally delineated in 2008 through a presidential decree and its management placed under a government ministry named Nairobi Metropolitan Development (MoNMD) (Appendix IV). At its formation, the region was zoned along local authority boundaries as (a) the core Metro, which covered the city; (b) the Northern Metro, which covered local authorities within Kiambu County; (c) the Southern Metro, which covered local authorities within Kajiado County and (d) the Eastern Metro, covering local authorities within Machakos County. The region covers four administrative counties¹ (Nairobi City, Kajiado, Kiambu & Machakos) (Appendix II) and is approximately 32,000 km² with a projected population of nine million (Government of Kenya (GOK), 2008).

Urbanization within the Nairobi Metropolitan Area surpasses the average rate for Kenya (42%) with Nairobi County having rates of 100%; Kiambu, 60.8%; Machakos, 52%; and Kajiado, 41.4% (Open Data Kenya, 2017). Of the estimated 9 million residents in the NMR, 48% are in Nairobi county, 25% in Kiambu, 17% in Machakos, and 10% in Kajiado counties. Comparing these statistics to spatial coverage of the counties, it is apparent that population densities are highest in Nairobi, followed by Kiambu. Kajiado and Machakos have vast stretches of undeveloped land with concentration of population being majorly in urban centers. Owing to its integration into the world economy, its unparalleled economic status in Kenya and its significant change in spatial and social structure, Nairobi is an appropriate “window” through which dynamics in urban housing markets can be examined.

Over the past few years the real estate sector in Kenya has experienced a massive boom this is due to the fact that the property market is responding to demand that has been created by the expanding middle class with disposable income and in which people have become able to service their mortgages. In Nairobi, which is the capital and largest city of Kenya, there is one of the largest expat communities in the continent this is due to the significant number of multinationals who have chosen Nairobi as either their African hub or East and Central African hub. Nairobi’s profile as a regional business hub has been growing as seen by the number multinationals, from diverse industries, which have chosen to open shop in the Kenyan capital or decided to choose the city as their base for Africa-wide operations (Knight Frank, 2013).

In Nairobi the demand for real estate is at an all-time high. With improved infrastructure like the Thika Superhighway, access to utilities, growth in information technology, the performance of the sector continues to grow (Mwathi, & Karanja, 2017). A major innovation has been the multibillion-dollar gated communities and mini cities coming up. These include the Kihingo Village, Thika Greens Golf Estate, Fourway Junction, Tatu City, Konza City, Migaa Golf Estate, Roslyn Heights, and EdenVille Estate among others. This has spurred the growth of the sector tremendously. These communities are preferred as they are perceived to present a sense of higher security and provide access to high-end facilities like swimming pools and gyms at a lesser cost than if homeowners were to construct their own (Kibunyi, 2015). Hence property in these communities has increased in value. Another boost to the sector players is the introduction of Real Estate Investment Trusts (REITS) by the Capital Markets Authority (CMA). This is to enable real estate companies be listed in the Nairobi Securities Exchange (NSE). Also enable small investors to have access to an otherwise prohibitive market (Julius, 2017).

1.2 Statement of Problem

Real estate prices in the major developed markets have been increasing, sometimes dramatically, over the last decade in both nominal and real terms. This has raised concern among many investors about the right level of prices in the real estate sector and about whether prices might not be already too high, while some see the recent price behaviour as support for a continuing trend (Sabal, 2015). It is raising a concern to researchers, property investors, mortgage lenders and policy makers involved in real estate and financial market that the current real estate price are on upward movement trend which may not be sustainable as evidenced from the various quarterly reports carried out by Hass consult, the real estate consultants from 2004 up to date.

The cost of constructing a house has a direct relationship to the final selling price (Glaeser, 2014; World Bank, 2016). Property prices in the formal market have been increasing, with Nairobi ranked as the highest priced city in Africa (World Bank, 2017). While modern free markets are mainly driven by demand and supply, real estate markets are unique forms markets often capital intensive, experiences supply inelasticity, without a central market and a relatively longer transaction process and timelines. The markets are characterized by heterogeneity, consisting of a series of geographical sectoral submarkets that lack a central trading market (Makena 2012). Many studies have been done on real estate pricing. However, none has particularly focused on the developers pricing and how the various factors both within their sphere to a certain level and out of there sphere influence pricing.

Studies have been conducted globally on house prices. Egert and Mihaljek (2017) studied the determinants of house prices dynamics. Selim (2018) studied the determinants of house prices in Turkey for both urban and rural areas. Mak (2016) studied the specific estimates of the determinants of real estate investments in China. Posedel & Vizek (2019) studied house price developments in six European countries. Locally, Mwololo (2012) studied the effects of macroeconomic variables on prices of residential real estate limiting the study only to the intervening factors. Marete (2011) on the other hand, while looking at price determinants in Kiambu municipality from a buyer's perspective concluded that location and realtors play a key role in real estate prices determinant. Merete found out that agents play a key role in real estate price determination in Kiambu as many owners bought their property through them. Another study by Amatete (2016) looked at the critical factors affecting pricing of real estate but specifically among low income people, with findings of factors of construction cost, financial and market dynamics, macroeconomic factors and structural characteristic as the key price determinants.

Most of these studies while they have greatly supported the industry players in understanding the pricing question have focused on the end user pricing and not the dynamics that affect an institutional developer in pricing their product. This study therefore sought to fill the research gap by looking at the extent various determinants affect developer pricing in Nairobi metropolitan area on residential housing.

1.3 Objectives of the Study

The overall objective of this study was to analyze the determinants of developers pricing for residential real estate in Nairobi Metropolitan Area.

1.3.1 Specific Objectives

This study was guided by the following specific objectives;

- i. To assess the effects of cost of land on price for residential real estate in Nairobi Metropolitan Area
- ii. To analyze the influence of property size on price for residential real estate in Nairobi Metropolitan Area
- iii. To investigate the influence of location on price for residential real estate in Nairobi Metropolitan Area
- iv. To assess the effects of cost of development finance on price for residential real estate in Nairobi Metropolitan Area

1.4 Research Questions

The study sought to answer the following research questions;

- i. What are the effects of cost of land on price for residential real estate in Nairobi Metropolitan Area?
- ii. To what extent does property size influence price for residential real estate in Nairobi Metropolitan Area?
- iii. What is the influence of location on price for residential real estate in Nairobi Metropolitan Area?
- iv. To what extent does the cost of development finance affect price for residential real estate in Nairobi Metropolitan Area

1.5 Scope of Study

This study focused on residential housing institutional developers whose business activities are within Nairobi County and its satellite towns. Nairobi Metropolitan Area was chosen, as it is the political and administrative center of the country. It is characterized by a high concentration of developers compared to other cities or counties in the country.

1.6 The Significance of the Study

The findings of this research are of significance to several stakeholders in the build environment. Developers would gain through improved insights into effective product pricing and how it affects overall product uptake by developing fit for the market residential units. Financiers gain understanding in property pricing thus better management of the mortgage book.

For policy makers, the findings may assist by providing insights into proper pricing models thus enabling proper policy formulation on tenure and zoning policies, property tax and administration policies. The findings can also be used in ensure other property markets in the country and upcoming initiatives such as Konza city in Machakos County adopts a right structure in product pricing.

Researchers and scholars benefit from the study by gaining insights into the current pricing model and better align their frameworks in advising on valuation surveys, developing localized pricing indices to better support the market. The study also provided an opportunity to derive research questions from different theories and test the claims and ideas advanced by the theories.

In a largely unregulated pricing market, the general market benefit research by gaining an understanding of into what and how various variables play into the property purchase price thus better bargaining advantage in making property purchase decisions and eventual value for money transaction and therefore value for themselves.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter looks into the relevant literature to development of residential real estate and its developer pricing. There is a review into the development process, key theories to the study and empirical studies done in the area of study.

2.2 Theoretical Framework

This section is focused on the foundations that ground the research on the interrelationships involving cost of land, property size, location, cost of finance and pricing for residential real estate. The emphasis in this section is on the breadth of theoretical perspectives-specifically, trade-off theory, real estate market theory and hedonic pricing model– that often underpin the design of research studies relating to the variables of interest.

2.2.1 The Trade Off Theory of Capital Expenditure

The original version of the trade-off theory grew out of the debate over the Modigliani Miller theorem. When corporate income tax was added to the original irrelevance proposition (Modigliani & Miller, 1963) this created a benefit for debt in that it served to shield earnings from taxes. The tradeoff theory predicts moderate borrowing by tax-paying firms. The theory states that there are advantages and disadvantages in financing with debt as well as equity for a firm or project. The theory is therefore based on the financing option or mix applied in the theory specific investment project or a firm (Moko & Olima, 2014).

The structure of urban housing markets often differentiates localities in terms of access to public, social and community services. Locational disadvantaged areas lack the facilities or amenities necessary to facilitate a satisfactory living or require residents to undertake long journeys to access such resources. According to Maher (1994) argues that locational disadvantage results from households making rational housing choices– a view that reflects the trade-off theory. Locational disadvantage reflects uneven and inequitable infrastructure and service investment. This theory was useful in explaining the relationship between location and pricing of residential real estate.

2.2.2 Real Estate Market Theory

The results of the research conducted by Darrat & Glascock, (1993) provide evidence that the real estate market is efficient. They further uncovered the relationship between current real estate prices and historical information on fiscal and monetary policy and other financial variables. The study

aims to determine how various variable influence the pricing of residential real estate by developers by exploring factors of cost of land, property size, location and government policy on zoning and development financing costs.

According to Krainer (2001) the model used here is a search-theoretic model where prices and liquidity are derived from the maximizing behavior of both buyers and sellers. Agents who live in houses consume housing services. Trade in houses takes place because individuals are vulnerable to idiosyncratic shocks that sever the match with their house. This might happen because of a change in household size or a job transfer. When an agent loses his match, he moves out immediately and puts the old house up for sale. As a seller, the agent prices the house so as to maximize the expected value of having the house on the market. At the same time, the agent is temporarily homeless and must search for a new house.

This theory was useful in this study as it provided an insight on the linkage between cost of land, cost of finance and price of residential real estate. A potential buyer, the agent searches until he finds a house that offers him enough utility net of price to warrant leaving the market. Since both buyers and sellers are optimizing, price and liquidity are determined endogenously. When the per period housing service flow is allowed to vary, liquidity also varies so as to match the observed correlations between prices, liquidity, and sales volume. It is according to economics theory, if the demand increases, supply need to increase, if not there will be imbalance and suppliers automatically face the risk by excess supplying, similarly demand increases but supply price of the housings need to be increased. In the same way, if buyers are getting good return and rent developers get good value even if they distinguish relative and nominal price of their commodities.

2.2.3 Hedonic Model of Pricing

Lancaster's (1966) seminal paper was the first attempt to create a theoretical foundation for hedonic modeling and argued that it is not necessarily a good itself that creates utility, but instead the individual "characteristics" of a good that create utility. Specifically, a utility of an item is simply the aggregated utility of the individual utility of each of its characteristics. The application of the hedonic price model to the housing market has key assumptions. First, homogeneity of the housing product is assumed. The other assumption is that the market operates under perfect competition, and there are numerous buyers and sellers with free entry and exit. The model also assumes that buyers and sellers have perfect information concerning housing product and price. Finally, the hedonic price model only works under the assumption of market equilibrium, and that there are no

interrelationships between the implicit prices of attributes (Rosen, 1974). A major issue frequently associated with the hedonic price model is the misspecification of variables where an irrelevant independent variable is included (over-specification), or where a relevant independent variable (attribute of a product) is omitted (under specification). This can lead to biased and inconsistent coefficients (Rosen, 1974)

The main advantage of this model is that one only needs to have certain information, such as the property price, the composition of housing attributes, and a proper specification of the functional relationships. The marginal attribute prices are obtained by estimating the parameters of the hedonic price function. It is a straightforward approach because only the coefficients of the estimated hedonic regression are needed to indicate the preference structure. No information whatsoever about individual characteristics or personal particulars of either the house buyers or the suppliers are required (Rosen, 1974). This is relevant to the study in the coming up with insights it how a model could assist in decision making based on varying dependent variable against a dependent variable.

This theory was useful in explaining the effects of location and physical size of a house on pricing for residential real estate. This modeling approach assumes that the monetary value of a dwelling unit depends on the attributes a particular house or apartment may possess. For instance, the market price of a dwelling may reflect its physical size and environmental characteristics, such as the number of rooms, age and location. This theory was very important in this study as it addressed the theoretical explanations of population variable on the demand side and construction costs variable on the supply side.

2.3 Empirical Literature Review

There are mixed findings regarding the determinants of housing prices according to the numerous studies carried out globally, regionally and locally. This section analyses the studies carried based on the study variables.

2.3.1 Cost of Land and Price for Residential Real Estate

Land is one of the key factors of production. Access to land is a critical element in providing low-income housing (United Nations, 2014). The supply of land is very limited. Land for public utility which would be used for low cost housing is also very scarce. Consequently, there is a growing class of urban landless whose access to land and shelter is becoming more difficult every day.

According to Nabutola (2014) land is a major constraining factor in the County of Nairobi because most of the slum dwellers do not own the land, which is owned by the central and county government making land inaccessible to the majority who need it most but cannot afford its premium price. Lock (2013) acknowledges the importance of land and stated that Land regulation and property titles are at the cornerstone of housing. In Kenya, land and property regulations have been inherited from colonial times and involve a rather complex tenure mechanism framed in many difference laws Gichunge (2017) notes that lack of affordable constructions combined with difficulties in accessing land makes it difficult to expand access to homeownership. In particular, the multiple land titling and registration mechanisms are grossly inefficient and overly complex.

Wen & Goodman (2013) carried out a study to examine the relationship between urban land price and housing price in China. Utilizing a longitudinal research design, the researchers collected data from a sample of 21 provincial capitals over the period 2000 to 2005. The data was analyzed using a simultaneous-equations model. The results showed that housing price and land price had an endogenous interrelationship, and as a whole, housing price had a greater impact on land price.

In a similar study, Wang, Wang, Lin and Zhang (2019) assessed the effect of land prices on the spatial differentiation of housing prices in China. The study was based on a 2,872-county dataset of housing prices in 2014. The linkage between land price and the housing prices was analyzed using the geographical detector technique. The results revealed that land prices were the primary driver of housing prices.

Altuzarra & Esteban (2011) analyzed the relation between land and housing prices in Spain. The study adopted a longitudinal in which quarterly data for Spanish provinces was collected over the period 2005-2010. The Granger causality method was used to examine the relationship between the two prices. The results revealed a causal relationship from housing market to land market. Causality in the opposite direction was to be very weak. That is, increase in housing prices could not be attributed to increase in land prices.

Greene and Rojas (2016) argue that, the land value constitutes a significant proportion of the total cost of financing incremental housing construction process and that access to low cost land is very essential in making the overall process viable. Land prices are determined mainly by location and development potential of the land. The location factor determines city growth and it is influenced by the construction of trunk infrastructure, which further determines the supply of serviced land in the urban setting. The development potential of land is influenced by land use and building

standards, which can either, limit land available for development or increase the supply. Because of the great influence of these two factors on land prices especially in central locations in urban areas, it stands to reason that, low-cost land can only be located at the periphery of these areas where there is lack of infrastructure and other basic social services (Payne, 2017).

According to Hassanali (2016) low-income housing projects are sited in areas of low land cost and high-density building permissibility. This allows reduction of the land cost constituent of each residential component, facilitating sale at lower prices. In looking for areas with lower land costs, developers have had to undertake low income housing schemes in locations that are peripheral to urban centers where benefit is gained from the nearness to cities but land costs are significantly lower (Hassanali, 2016). According to Payne (2017) a number of regional and local governments have experimented with density bonusing, inclusionary zoning, land trusts and land lease arrangements to increase the availability of land supply for affordable housing. In South Africa, Local governments have no consistent strategies for acquiring land for low income housing as they were limited to provision of housing land acquisition and partially because of a disjuncture between spatial plans and housing strategies (Department of Local Government and Housing, 2017).

According to Ondola, (2014) Land supply is very limited, coupled with the prerequisite for it as a civic utility for low-cost housing, making it a scarce resource. Consequently, there is a growing class of “landless” from the low and middle-income level groups whose access and ownership to land and shelter is becoming more difficult as time progresses. Land represents a major drawback in homeownership in urban areas of Kenya (Ndungu, 2014). According to research, the unavailability of fairly valued and well situated, serviced land with proper documentation is a major inhibitor to rapid growth in Mombasa County (Ngugi & Njori, 2013). There are various reasons that include the government as a major holder of vast pieces of land, control of huge tracts of land by private entities, poor ecological conditions, and the absence of the crucial infrastructure including sewer and water systems are a major challenge to the developers (Njathi, 2011).

An extremely skeptical property market and the great demand for accommodation have propelled Kenya’s land property value inflation increasingly over the last ten years (CAHF, 2013). High land prices, poor systems of land records and a slow registration process discourage potential homeowners from mortgage and financing due to lack of apt verification of the prospective developmental properties and inability to service the huge amounts demanded. Moreover,

bureaucratic red tapes in the Lands ministry and other related government stakeholders are also a key hindrance among the County potential homeowners (Ngugi & Njori, 2013).

2.3.2 Property Size and Price for Residential Real Estate

There are mixed findings regarding the determinants of housing prices according to the numerous studies carried out globally. Candas, Kalkan, and Yomralioglu, (2015) carried out a study in Istanbul Turkey and examined the determinants of house prices in and employed location features, presence of elevators, the floor in case of apartments, heating systems, land value and rent income value. The study used 116 valuation reports and employed multiple regression analysis data analysis method and established that the floor the apartment was located alongside the presence of heating system, the land value and rent value had significant influence on the price of the house. The focus of the current study would be to compare whether the significant determinants of housing prices in other regions of the world like Turkey would also be applicable in Nairobi.

Chung (2012) studied the determinants of residential property prices in Hong Kong using a cointegration analysis approach. The study focused on house sizes that ranged from very small of below 40M² to the very large size of above 160M². The study established that average annual rent income, size of the property, excess liquidity, Hong Kong stock market index, real interest rates significantly influenced average price of residential houses. Chung's (2012) study differs from the current, which focuses on housing features as the determinants of apartment prices in Nairobi Metropolitan area.

Simons, Quercia and Maric (2018) in the study of value impact of new residential construction and neighborhood disinvestment on residential sales price also found that the neighborhood variables included demographic, location and economic attributes have the expected sign and are statistically significant. In the same vein, the following property characteristics and attributes have commonly been used by experts as useful variables in real estate valuation. These are the number of bedrooms, building size, age of building, land size, location convenience and quality of building materials. Other useful variables sometimes include road type, car park facility, number of bathrooms, number of toilets, number of floors in the building, neighborhood attractiveness, physical condition, space arrangement, structural quality, house interior, and recreational facilities, among others (Lokshina, 2015).

2.3.3 Location and Price for Residential Real Estate

Solanas (2014) studied the relationship between house prices and rents in Barcelona, Spain. They

found periods when house prices were high corresponded with periods of increased demand for investor housing and rentals were an important variable in determining house prices. Gallin (2004) used US data to explore the long run relationship between house prices and rents. Gallin concluded that house prices do correct back to rents rather than rents correcting to house prices. Changes in property rents and values may arise with increased access, lower commuting costs, and/or potential changes in property utilization. Changes in value are important because they typically occur faster than changes in land use and may thus influence or change urban form.

Pollakowski (1995) indicates that house prices are not determined only by accessibility but also by the environmental attributes of the location. The environmental factors, such as neighborhood amenity, parks, and levels of neighborhood security have to be taken into account. Moreover, the analyzed location is also relevant to the overall urban structure. To consolidate urban structure and the cost of providing urban infrastructure, existing infrastructure is more effectively utilized in the built-up urban areas. The infrastructure includes services such as sewerage and drains, roads, and public transport, as well as social infrastructure such as health care facilities, education facilities and other community services. These attributes are usually provided by the State government and by the municipal council through its policies and services. Since infrastructural facilities are regarded as booster to social wellbeing of city dwellers hence the choice of infrastructural facilities as factors that may likely affect the rental value of properties in Nigerian cities is considered to be appropriate.

A study by John (2018) examined how new transport infrastructure influenced property values in the South Yorkshire (UK). John found that anticipation of the construction of a super tram acted to reduce house prices. This is possibly because of expectations of disruption during the building of the system. However, on completion of the super tram, the negative impact has disappeared. Moreover, this study has also shown that the type of neighborhood was a major influence on house price, which was statistically significant at a rate less than 1 percent.

Amenyah and Afenyi (2013) carried out a study in Accra Ghana on factors determining residential rental prices. The involved 100 households and it employed the Chi-square technique to assess the association between determinants and house prices in Accra. The findings were that location, size of the house; connection to utility facilities appeared to have significant influence on house rent prices. The study focused on low cost housing units and had determinants relating to connection

to utilities unlike the current research, which focuses on determinants of pricing of estate apartments in Nairobi where connection to utilities would automatically be in place.

Aluko (2011) studied the effects of location and neighborhood features on housing values in metropolitan Lagos. Locational features included: proximity to workplace, schools, shopping, recreation and worship centers. Neighborhood features included: crime levels, noise levels and the cost of refuse collection. Structural features included: area of land occupied by building, number of rooms in the house, number of persons per house, number of kitchens, bathrooms and open spaces per house. Multiple regression analysis was employed and the study found that neighborhood and locational features significantly influence on house values when small housing units were examined.

2.3.4 Cost of Development Finance and Price for Residential Real Estate

Posedel & Vizek (2014) studied house price developments in six European countries: Croatia, Estonia, Poland, Ireland, Spain and the United Kingdom. The main goal was to explore the factors driving the rise of house prices in transition countries. Because house price increases in the last two decades were not peculiar to transition countries, the analysis was extended to three EU-15 countries that have recorded house price rises. The similarities and differences between the two groups of countries in terms of house price determinants can thus be explored. In the first part of the empirical analysis VAR was employed to detect how GDP, housing loans, interest rates and construction contribute to real house price variance. In the second part of the analysis multiple regression models were estimated. The results of both methods suggested that the driving forces behind house price inflation in both groups of countries were very similar and encompass the combined influence of house price persistence, income and interest rates.

Apergis and Rezitis (2003) studied the dynamic effects of the macroeconomic variables on the housing prices in Greece. By use of Vector Autoregressive modeling, the findings suggested that the changes in housing prices respond to the lending rates, inflation, employment and money supply. The study found interest rates, inflation and the employment rate to be the most important variable in explaining housing prices while money supply was insignificant. Emanating from the study's findings, the main causes of the financial crisis in Greece in the year 2008 were: the excessive demand of housing, the consequent decline in demand and increasing stock of housing, tight monetary policy that raised the interest rates, negative prospects for the future performance of the housing market, rising unemployment, adverse economic environment the excessive tax

burdens of the private property. The study concluded that the main drivers of housing prices in Greece and the financial crises are the six mentioned factors. The current study applied the methodology to Kenya where the housing market has not experienced instability.

A study one by Moko & Olima (2014) on the determinants of house construction cost in Kenya with a focus on Nairobi found out that in terms of possible strategies for reducing construction cost, the respondents had a high level of consensus that public-private-partnership, government incentives and use of alternative building technology are the most appropriate strategies for reducing house cost in Nairobi County. The context was not from a developer perspective but from professionals in the construction industry. The results further found out that cost of finance and cost of infrastructure as key determinants of cost of construction. While this is key to the foundation of this study, it is important to also look at such key factors as government policy on zoning to be able to find out its effect in the ecosystem of the various forces around real estate development.

Muthee (2012) studied the relationship between Economic growth and real estate prices in Kenya. Tracking the Hass Housing Price Index and Kenya's GDP numbers over a period of five years, data was retrieved from different sources but aligned in equal time and periods, reviewed and subjected to regression analysis and tested for significance. The results indicated that there is a relationship between the variables revealing that a quarterly change in housing prices yields a quarterly change in GDP. The data collected and analyzed indicated that property is a strong asset class which has been under exploited in portfolios.

Lumbale (2012) studied the relationship between house prices and real estate financing in Kenya. The objective of the study was to determine the relationship between house prices and real estate financing in Kenya. Causal study design was employed in this research. Purposive sampling technique was used to select the sample. The study purposively selected a total of 20 respondents who formed the sample size of this study. The study found that the changes in housing prices are positively and significantly related to the long-term evolution of real estate financing. This result suggests that the evolution of housing prices is not triggered by bank real estate lending and that banks just accommodate real estate financing to the evolution of house prices. Though the study shows bidirectional causality it concludes that the real estate market does not really affect housing price changes rather changes in housing prices do affect the amount of real estate financing.

Julius, (2012) studied the determinants of Residential Real Estate Prices in Nairobi. Her objective was to evaluate factors that have been affecting the real estate market since there was little empirical study prior to this. In particular, she evaluated how interest rates, level of money supply, rate of inflation, employment rate and population growth affected house prices. Using secondary data collected from the Central Bank of Kenya, Kenya National Bureau of Statistics and the Hass Consulting Ltd., a multivariate regression was done using SPSS to establish the relationships. The study found out that employment growth and the level of money supply information can give economists and financial analysts a better understanding of the real estate market and its influence on real estate prices. An increase in interest rates reduces residential real estate prices.

Kigige and Omboi (2011) studied the factors influencing housing prices in Meru County of Kenya based on data from a cross sectional survey of real estates. The variables used were incomes of real estate investors, location, demand and realtors influence on the housing prices. The size of the population was 15,844 for the five selected areas of Meru County. From the data, a sample of 390 real housing owners was selected by stratification for the selected sample and then selecting the respondent by using simple random selection technique. The findings showed that income contributes around 70 percent of the variation in housing price. Demand for housing contributes approximately 20 percent of the change in housing price. Location and type of Realtors were found not to be significant in determining housing price. The factors considered explained up to about 70 percent of variations in the housing prices. The results were only applicable to a small section of the country. The current study used quantitative data analysis using time series data for the whole country to investigate factors influencing growth in housing prices.

2.4 Research Gaps

The literature commonly agrees that housing prices are affected by many factors. However, the bulk and nature of these factors seem to vary. In part, this might be attributed to the different contextual, conceptual and methodological choices of the researchers.

The contextual gap arises from the fact that the studies were carried out in foreign countries or other areas other than Nairobi Metropolitan area economies and developed countries as well as sectors as opposed to the current study. Further, these studies have adopted varied research designs and data analysis techniques, which render different results. In Kenya, no study has focused on the underlying effects of cost of land, property size, location and cost of finance on

the price of residential real estate in the Nairobi Metropolitan Area. This study sought to fill this research gap. Table 2.1 shows a summary of the research gaps identified in various studies.



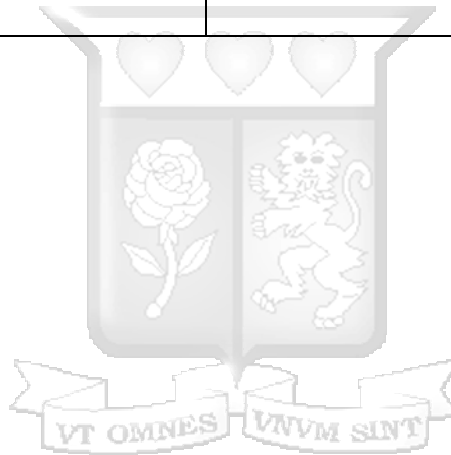
Table 2.1: Summary of Research Gaps

Researchers	Focus	Variables	Methodology	Findings	Gaps	Addressing the gaps in the current study
Wen & Goodman (2013)	Relationship between land price and housing prices in China	-Land price -Housing price	-Longitudinal research design	-Land and housing prices had an endogenous relationship	-Restricted to China -Based on a different research design	-Focused on the cost of land and housing prices of residential real estate in Nairobi Metropolitan Area -Based on cross-sectional research design
Wang et al. (2019)	Effect of land prices on spatial differentiation of housing prices in China	-Land prices -Housing prices	Cross-sectional research design	Land prices were the primary driver of housing prices	Restricted to China	Focused on the cost of land and housing prices of residential real estate in Nairobi Metropolitan Area
Altuzarra & Esteban (2011)	Relationship between land and housing prices in Spain	-Land prices -Housing prices	-Longitudinal research design	-Causal relationship from housing to land market	-Restricted to Spain -Based on a different research design	Focused on the cost of land and housing prices of residential real estate in Nairobi

						Metropolitan Area -Based on cross-sectional research design
Chung (2012)	Determinants of residential property prices in Hong Kong	<ul style="list-style-type: none"> -Rent Income -Property size -Liquidity-Real interest rates -Residential property price 	-Longitudinal research design	Annual rent income, property size, excess liquidity, real interest rates and stock market index significantly influenced residential houses.	-Limited to Hong Kong	Focused on determinants of pricing for residential real estate in Nairobi Metropolitan Area
Candas et al. (2015)	Determinants of house prices in Turkey	<ul style="list-style-type: none"> -Location features -Land value -Rent income value -Presence of elevators -No. of floors -Heating systems -House price 	-Cross-sectional research design	-Location, heating system, no. of floors, land value and rent value had a significant influence on the price of the house	-Limited to Turkey	Focused on determinants of pricing for residential real estate in Nairobi Metropolitan Area
Solanas (2014)	House prices and rents in Spain	<ul style="list-style-type: none"> -House price -Rent 	Cross-sectional research design	Significant relationship between house prices and rents	-Limited to Spain	Focused on determinants of pricing for residential real estate in Nairobi

						Metropolitan Area
Pollakowski (1982)	Effect of location on house prices in United States	-Location -House prices	Longitudinal research design	Environmental attributes of the location have a significant effect on house prices	-Limited to the US	-Focused on the effect of location on the pricing of residential real estate in Nairobi Metropolitan Area
John (2018)	Influence of transport infrastructure on property values in UK	-Transport infrastructure -Property value	Cross-sectional research design	Type of neighborhood had a significant impact on house price	-Limited to the UK	-Focused on the effect of location on the pricing of residential real estate in Nairobi Metropolitan Area
Amenyah and Afenyi (2013)	Factors determining residential rental prices in Ghana	-House prices -Size -Location -Utilities	Cross-sectional research design	Size, location and access to utilities had a significant effect on house prices	Restricted to Ghana	Focused on determinants of pricing for residential real estate in Nairobi Metropolitan Area
Kigige & Omboi (2011)	Factors influencing housing prices in Meru County	-Location -Demand -Income -Housing prices	Cross-sectional research design	Income and demand for housing had a significant impact on housing prices	Restricted to Meru County	Focused on determinants of pricing for residential real estate in Nairobi

						Metropolitan Area
Aspergis & Rezitis (2013)	Effect of macroeconomic variables on housing prices in Greece	-Macroeconomic variables -Housing prices	-Longitudinal research design	Interest rates, inflation and employment rate had a significant impact on house prices	Restricted to Greece	Focused on the effect of cost of development finance on residential real estate in Nairobi Metropolitan Area



2.5 Conceptual Framework

The key objective to conceptual framework was to explain variables related to the study and their relationships. The figure below gives an illustration on the conceptual framework.

Independent Variables

Dependent Variable

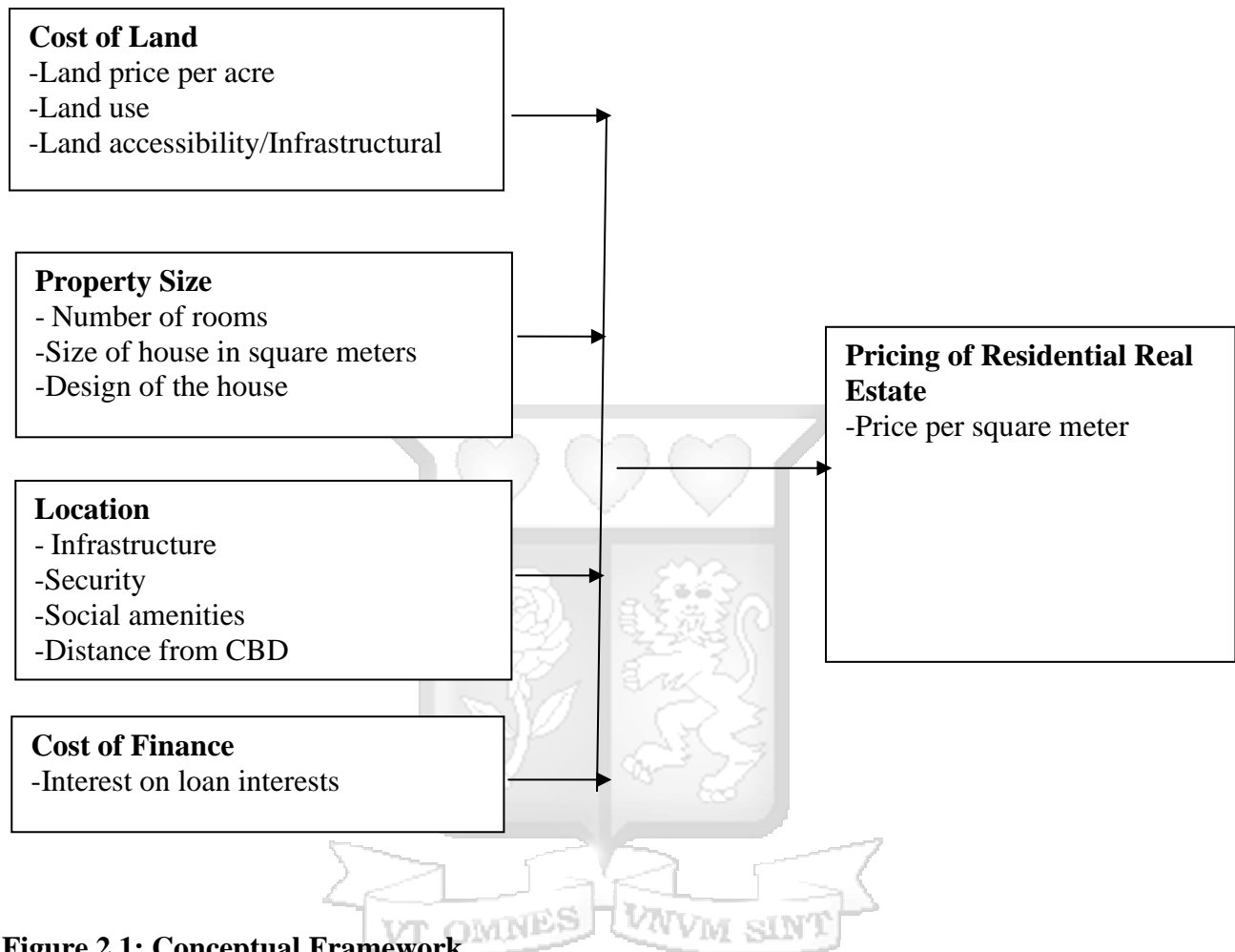


Figure 2.1: Conceptual Framework

Source Author (2020)

2.6 Operationalization of the Variables

The study was informed by four variables. The variables of interest were; cost of land, property size, location, cost of finance and pricing of residential estate. Table 2 presents the operationalization and measurement of the study variables.

Table 2.1: Summary of Operationalization and Measurement of Variables

Study Variables	Indicators	Measurement	Question
Independent Variable: Cost of land	<ul style="list-style-type: none"> • Land price per acre • Land use • Land accessibility 	Ordinal	Section B
Independent variable Property size	<ul style="list-style-type: none"> • Number of rooms • Size of house in square meters • Design of the house 	Ordinal	Section C
Independent variable: Location	<ul style="list-style-type: none"> • Infrastructure • Distance from the CBD • Social amenities • Security 	Ordinal	Section A
Independent variable Cost of finance	<ul style="list-style-type: none"> • Interest on loan interests 	Ordinal	
Dependent Variable: Pricing of Residential Real Estate	<ul style="list-style-type: none"> • Price per square meter 	Ordinal	Section E

Source: (Author, 2020)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explored the research philosophy and design, the population and the sampling techniques, data collection and data analysis methods, data quality and the research ethical consideration.

3.2 Research Philosophy

The study was guided by the positivist philosophy. Durgee (1984) posits that positivism is a method, which follows a scientific approach to research. It is generalizable, objective, replicable, rigorous and testable for validity. According to Bryman and Bell (2016), positivism ensures objectivity, neutrality, clear measurement and validity of results. Positivism is considered most appropriate for the proposed study procedures and methods; that is, the development of study objectives, formulation of hypotheses, operationalization of study variables, logic and evidence attesting. The objective of the study is to establish correlations among the variables of interest. Therefore, scientific principles reflected through the use of statistical techniques such as regression analysis will have to be invoked. These scientific principles underpin the positivist philosophical view.

3.3 Research Design

A cross-sectional research design was used in this study. A cross-sectional design allows for a fine-grained description of a phenomenon occurring within a given population at a particular point in time (Bryman, 2016). The focus of this study was to examine the determinants of developers pricing for residential real estate in Nairobi Metropolitan Area. Therefore, the data collection exercise was set to bring in varied responses from different sections of the target population, which would be studied at the same time. The cross-sectional design, thus enabled the researcher to generate a representative picture of the target population at one fixed point in time based on the responses gathered.

3.4 Research Strategy

The study used quantitative research approach using survey strategies. The questions answered are what, where and how much (Saunders et al., 2016). This is through structured interviews, questionnaires or observations that also structured. The findings from the data after analysis were used to deduce the relationship between the set variables to develop an appropriate model.

3.5 Population

The target population is the specific population about which information is desired (Makena, 2012). Further, Makena (2012) describes target population as being well defined set of people, services, elements, group of things or households that are being investigated in a study. The population of this study encompassed the employees or practitioners of the developers in charge of pricing the various real estate development firms operating within the metropolis.

Table 3.1: Study Population

Description of Institution or Group	Population	Proportion Percentage
Real Estate developers (List of Developer KPDA 2018.)	75	100
Total	75	100

Source: Researcher (2020)

The researcher employed a census survey, which means all the 75 developers were the respondents for the study. This survey is appropriate because the total population is small and easily accessible. One of the greatest advantages of a census survey is that all respondents have the same opportunity to participate. A census survey tends to enhance feelings of security surrounding the accuracy of the results. Finally, census survey is easier to administer because it includes all persons.

3.6 Data Collection

Data used was both from primary and secondary sources. Primary source data was from the sampled organizations/firms and institution with structured questionnaires. The question had three key parts; the introduction detailing the purpose of the study, ethical consideration and a welcome note; the body part with specific questions addressing the specific research questions and the last part with a thank you note. Secondary data source includes Central bank of Kenya on GDP growth and inflation, Data on housing index from Kenya banker Association, KNBS and Hass Consult for the last 5 years and Zoning regulation from the local Authorities in the metropolis. The period was chosen, as data beyond that period was not readily available.

Questionnaires were administered through hand delivery and or mail to key staff in the target groups. Trained research assistants were also used to visit the targeted groups with questionnaires and authorization letter from the Strathmore Business School to administer the questionnaires. Key decision staff in the target group was interviewed after properly obtaining access.

3.7 Data Analysis

Collected and organized data needs to be processed to make it useful, that is to turn it into information (Saunders et al., 2016). The data was analysed using descriptive and inductive

statistics with the use of statistical software MINTAB version 14. Descriptive statistics included measures of central tendency of mean, frequency, standard deviation and percentile. Also, used were measures of dispersion presented in graphs.

A straight-line predictor model was developed.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon \dots\dots\dots(1)$$

Where:

Y = Residential pricing per meter square as priced by developers

β_0 = Constant Term

$\beta_1, \beta_2 \dots \beta_7$, = Beta coefficients

X_1 = Cost of land

X_2 = Property size

X_3 = Location

X_4 = Cost of finance

ε = Error term

Similarly, multiple regression model was used to find out the relative importance of each variable and how they impact property pricing. The study deployed inferential statistics of non-parametric test, which include analysis of variance (ANOVA) to test the significance of the overall model at 95% level of significance.

3.8 Pilot Testing

To assess the validity and reliability of the questionnaire, a pilot study was conducted and as per Amatete (2016), the results obtained from the analysis of the data actually used to check if it represents the phenomena under study. The suitability of the questions was also test through the feedback from the academic research supervisor and industry experts including architects, engineers, quantity surveyors and real estate consultants. Feedback obtained was incorporate in the questions so that the objective correct content is eventually collected. Friends were piloted to test face validity.

On the reliability of the study or the consistence of the instruments used in the study, various samples were deployed. In order to test the reliability of the instruments, internal consistency technique was applied using Cronbach's Alpha. The alpha value ranges between 0 and 1 with

reliability increasing with the increase in value (Amatete 2016). The study piloted on not less than 10 respondents borrowing from Saunders et al. (2016) that for such student studies, minimum number for a pilot is 10.

3.9 Research Ethics

In the process of data collection, data organization, analysis and inferencing, the study researcher upheld high standards in relations those sampled by protecting their rights to privacy and fair treatment, high integrity levels, maintained objectivity through accuracy, was truthful and transparent and is reporting the true findings.

The research process was granted a licence by the Strathmore University Institutional Ethics Review Committee-SU-IERC0724/20 and the National Commission for Science, Technology & Innovation (NACOSTI), license number NACOSTI/P/20/5084 and all ethical requirements fully adhered to.



CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

The following chapter presents the presentation of research findings acquired from the field with an aim of achieving the objectives of the study.

4.2 Response Rate

The sample consisted of 75 developers targeting pricing personnel in the establishments. The study response rate is presented in Table 4.1.

Table 4.1: Response Rate

Category	Frequency	Percentage (%)
Responded	62	82.7
Did not respond	13	17.3
Total	75	100

Source: Researcher (2021)

In Table 4.1, out of the 75 questionnaires that were administered, 62 of them were returned and duly filled up representing a response rate of 82.7%. The remaining did not fill the questionnaires due to unavoidable circumstances. Mugenda and Mugenda (2012) maintained that for a response rate to be satisfactory it has to be 50% and the chance it comes to 70% is good enough. 82.7% there was satisfactory enough to draw conclusions and inferences.

4.3 Demographic Information

This section presents the demographic information relating to relating the participants information. The study sought to determine the period, which the real estate development firm had been operational.

Table 4.2: Demographic Characteristics

Characteristic	Frequency	Percentage (%)
<i>Period in which firm had been operational</i>		
1-5 years	10	16.1
6-10 years	26	41.9
More than 10 years	26	41.9
<i>Portfolio for development</i>		
Below 500 million	10	16.1
501 million – 1 Billion	30	48.4
Over 1 Billion	22	35.5
<i>Type of project undertaken</i>		
Residential Apartments	27	43.5
Bungalows	37	59.7
Villas	29	46.8
<i>No. of projects launched in different time periods</i>		
Less than 1 year	6	10%
1-5 years	34	55%
6-10 years	42	68%
More than 10 years	59	95%
<i>No. of Employees</i>		
Low Cost Residential	37	59.7
Middle Income Residential	41	66.1
High end Residential	35	56.5

Source: Researcher (2021)

The results show that most (41.9%) of real estate firms had been operational for a period of 6-10 years or more than 10 years while 16.1% had been operational for duration of 1-5 years. Respondent were asked to indicate the portfolio of their real estate development in residential real estate. From the study findings 48.4% of the respondent's indicated that they had between 501 million 1 billion, 22% of the respondent's indicated over 1 billion while 16.1% of the respondent's indicated below 500 million. This implies that the portfolio for most of the real estate development in residential real estate ranged between 501mn and 1 billion years.

Participants were asked to indicate the type of residential real estate project undertaken by the firm. Results are presented in Table 4.4. From the study findings, 59.7% of the respondents indicated that the firm implemented bungalows, 46.8% of the respondents indicated villas while 43.5% of the respondents indicated residential apartments. This implies that firms implementing various types of residential projects were fairly involved in this study.

The results show that in less than 1 year, on average firms launched 10% of the their projects into the market, in a period of 1 to 5 years most firms launched 55% of the their projects while In the last 6 to10 years most firms launched 68% of the their projects in the market while firms that had operated for more than 10 years had launched up to 95%% of the their projects into the market.

Participants were asked to indicate the type of properties, which they mainly provided. From the study findings, 41(66.1%) of the respondents indicated that they provided middle income residential, 59.7% of the respondents indicated that they provided low cost residential while 35 (56.5%) of the respondents indicated that they provided high end residential. this implies residential development firms targeted various classes of income earners including high, low and middle.

4.4 Cost of Land, Location and Zoning

Table 4.3: Apartment Properties

Property ID	Distance from Central Business District (CBD) in Kilometres	Total development Space	Price Per Acre	Number of floors	Sale Price per SQM in KSH	Zone – Indicate number as per Local Authority ordinance
1.Riverside	5 km	10000	135,400,750	6	138,125	Upper end
2. Kilimani	4.4 km	10000	135,400,750	6	124,197	Upper end
3.Kahawa West	17.5 km	3000	86,722,858	4.5	85,523	Lower Mid-End Suburb
4. Waiyaki Way	9.4 km	1800	86,722,858	4.5	86,783	Lower Mid-End Suburb
5. Thindigua	11.3 km	5000	22,862,719	4	99,119	Satellite Towns
6. Ruaka	14.5 km	8000	22,862,719	5	104,997	Satellite Towns

Source: Researcher (2021)

Table 4.4: Non-apartment Properties

Property ID	Distance from Central Business District (CBD) in Kilometres	Total development Space	Price Per Acre	Number of floors	Sale Price per SQM in KSH	Remarks
1. Karen	9.6 km	400	135,400,750	2	203,968	
2. Runda	11.1 km	450	135,400,750	2	249,748	
3. Loresho	10.9 km	250	135,400,750	2	146,041	
4. South C	6.3 km	1500	86,722,858	3.5	120,928	
5. Ruiru	24.1 km	1500	86,722,858	3.5	98,503	
6. Ngong	27.4 km	1500	86,722,858	3.5	56,464	

Source: Researcher (2021)

4.5 Effect of Cost of Land on Pricing of Residential Real Estate

Participants were required to indicate their level of agreement with the following statements relating to the effects of cost of land on pricing of residential real estates.

Table 4.5: Descriptive Statistics for Cost of Land

Statement	N	Min	Max	Mean	Std. Dev
The supply of land is very limited therefore leading to rise in residential houses prices	62	4.00	5.00	4.31	0.46
Land for public utility which would be used for low cost housing is also very scarce	62	3.00	5.00	4.03	0.68
Multiple land titling and registration mechanisms increases the cost real estate's development	62	3.00	5.00	4.00	0.57
Low-cost land can only be located at the periphery of these areas where there is lack of infrastructure	62	3.00	5.00	4.11	0.68
Land represents a major drawback in homeownership in urban areas of Kenya	62	3.00	5.00	4.10	0.53

High land prices, poor systems of land records and a slow registration process discourage potential homeowners	62	3.00	5.00	4.05	0.73
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From the study findings, majority of the participants agreed the supply of land is very limited therefore leading to rise in residential houses prices (M=4.31 SD=0.46), low-cost land can only be located at the periphery of these areas where there is lack of infrastructure (M=4.11 SD =0.68), and that land represents a major drawback in homeownership in urban areas of Kenya (M = 4.10 SD=0.53).

Further the study established that high land prices, poor systems of land records and a slow registration process discourage potential homeowners (M=4.05 SD=0.73), Land for public utility which would be used for low cost housing is also very scarce (M=4.03 SD=0.68) and that Multiple land titling and registration mechanisms increases the cost real estate's development (M = 4.00 SD =0.57).

4.6 Effect of Location on Pricing of Residential Real Estate

Participants were required to indicate their level of agreement with the following statements relating to the effects of location on pricing of residential real estates.

Table 4.6: Descriptive Statistics for Location

	N	Min	Max	Mean	Std. Dev
Access to major roads and highways has led to an increase in property value	62	3.00	5.00	4.06	0.51
Accessibility to infrastructure has opened up new opportunities for development of property and this has pushed up values.	62	3.00	5.00	4.15	0.54
The military and police presence in the neighbourhood have led to an increase in property prices	62	3.00	5.00	4.08	0.61
House buyers always consider the availability of health and care facilities when making their decision to purchase a house	62	3.00	5.00	4.11	0.60
The prevalence of education institutions has high impact on the price of a residential property	62	3.00	5.00	4.06	0.57

Recreation and leisure facilities in an area leads to an increase in property prices	62	3.00	5.00	4.18	0.46
The existence of places of worship such as churches and mosques have led to an increase in the value of real estate	62	3.00	5.00	4.10	0.59

Recreation and leisure facilities in an area leads to an increase in property prices (M= 4.18 SD =0.46), accessibility to infrastructure has opened up new opportunities for development of property and this has pushed up values (M=4.15 SD=0.54) and that house buyers always consider the availability of health and care facilities when making their decision to purchase a house (M=4.11 SD =0.60).

The existence of places of worship such as churches and mosques have led to an increase in the value of real estate (M=4.10 SD=0.59), access to major roads and highways has led to an increase in property value and that the prevalence of education institutions has high impact on the price of a residential property (M =4.06 SD=0.57).

4.7 Effect of Property Size on Pricing of Residential Real Estate

Participants were required to indicate the following information in relation to the size of property units in their portfolio

Table 4.7: Apartment Properties

Property ID	Number of bedrooms	Size in SQM	Sale Price per SQM	Other amenities e.g. balconies, swimming pool
1. Riverside	4	150	138,125	Swimming pool, balconies, gym, solar roof panels, backup generator, lift,
2. Kilimani	3	130	124,197	Lift, backup generator, large windows, ample parking space, kids play area
3. South C	3	100	103,199	Kids play area, gym, lift, Dsq, balconies, pantry area,
4. Waiyaki Way	4	80	86,783	Balconies, backup generator, lift, sensor doors, solar roof panels,
5. Thindigua	2	80	99,119	Balconies, generator, Borehole, rooftop sitting area, pantry area

6. Ruaka	2	100	104,997	Balconies, generator, Borehole, rooftop sitting area, pantry area
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Source: Researcher (2021)

Table 4.8: Non-apartment Properties

Property ID	Number of bedrooms	Size in SQM	Sale Price per SQM	Other amenities e.g. balconies, swimming pool
1. Karen	5	400	203,968	Private swimming pool, Private Gym, Borehole, Backup generator, underground tanks, sauna,
2. Runda	6	450	249,748	Swimming pool, jacuzzi, gazebo, cctv cameras, large fireplace, generator, gym
3. Loresho	5	250	146,041	Borehole, motion sensors, solar panel, water storage tanks, generator
4. South C	4	120	120,928	Solar water heater, large patio, generator, 2 kitchens, intercoms, dhobi area
5. Ruiru	5	120	98,503	Garden, gazebo, courtyard, generator, solar panel, borehole
6. Ngong	4	150	56,464	Generator, solar panel, swimming pool,

Source: Researcher (2021)

Participants were required to indicate their level of agreement with the following statements relating to the effect's property size on pricing of residential real estates.

Table 4.9: Descriptive Statistics for Property Size

	N	Min	Max	Mean	Std. Dev
Number of bathrooms, number of toilets, number of floors in the building determines the price of the house	62	3.00	5.00	4.08	0.64
Presence of elevators and heating systems also plays a role in price determination	62	3.00	5.00	3.98	0.64
Average annual rent income of a house also determines its selling price	60	3.00	5.00	3.95	0.72

Source: Researcher (2021)

The study established that majority of the respondents agreed that the number of bathrooms, number of toilets, number of floors in the building determines the price of the house (M=4.08 SD=0.64), presence of elevators and heating systems also plays a role in price determination (M=3.98 SD=0.64) results also show that the average annual rent income of a house also determines its selling price (M=3.95 SD=0.72).

4.8 Effect of Cost of Finance on Pricing on Residential Real Estates

Participants were required to indicate their level of agreement with the following statements relating to the effects of cost of finance on pricing of residential real estates.

Table 4.10: Descriptive Statistics for Cost of Finance

Statement	N	Min	Max	Mean	Std. Dev
Access to finance by both the developers and buyers influence pricing of the houses	3.00	5.00	60	4.12	0.61
When interest rates are low, developers are more likely to borrow money as doing so costs them less	3.00	5.00	60	3.98	0.50
When interest rates are high, credit becomes more expensive, making more developers shy away from loans	3.00	5.00	60	4.18	0.47
Availability and cost of long-term funding has a major influence on the final cost of the house	3.00	5.00	60	4.15	0.63
Financing cost is therefore one of the key obstacles for the development of large-scale real estate developments	3.00	5.00	60	4.10	0.48
Increase in mortgage rates have led to most potential investors preferring to buy houses in cash rather than take up mortgages.	3.00	5.00	60	4.25	0.51

Source: Researcher (2021)

The study established that majority of the respondents agreed that increase in mortgage rates have led to most potential investors preferring to buy houses in cash rather than take up mortgages (M = 4.25 SD =0.51), when interest rates are high, credit becomes more expensive, making more

developers shy away from loans ($M = 4.18$ $SD = 0.47$) and that availability and cost of long term funding has a major influence on the final cost of the house ($M = 4.15$ $SD = 0.63$).

Results also show that access to finance by both the developers and buyers influence pricing of the houses ($M = 4.12$ $SD = 0.61$), results also show that financing cost is one of the key obstacles for the development of large scale real estate developments ($M = 4.10$ $SD = 0.48$) and that when interest rates are low, developers are more likely to borrow money as doing so costs them less ($M = 3.98$ $SD = 0.50$).

4.9 Pricing of Residential Real Estates

Participants were required to indicate their level of agreement with the following statements related with pricing of residential real estates.

Table 4.11: Descriptive Statistics for Pricing of Residential Real Estates

Statement	N	Min	Max	Mean	Std. Dev
Residential real estate's prices are way high above the middle-class income	60	3.00	5.00	4.23	0.56
Cost of land affects the pricing of residential real estates	60	3.00	5.00	4.12	0.52
Property size affects the pricing of residential real estates	60	3.00	5.00	4.13	0.54
Location affects the pricing of residential real estates	60	3.00	5.00	4.32	0.54
Cost of finance affects the pricing of residential real estates	60	3.00	5.00	4.17	0.53

Source: Researcher (2021)

The study established that majority of the respondents agreed that the location affects the pricing of residential real estates ($M = 4.32$ $SD = 0.54$), residential real estate's prices are way high above the middle class income ($M = 4.23$ $SD = 0.56$) and that cost of finance affects the pricing of residential real estates ($M = 4.17$ $SD = 0.53$).

Further the study established that property size affects the pricing of residential real estates ($M = 4.13$ $SD = 0.54$) and that cost of land affects the pricing of residential real estates ($M = 4.12$ $SD = 0.52$).

4.10 Diagnostic Tests

As previously mentioned, a regression model was used to evaluate the objectives of this study. However, prior to conducting the regression analysis, a series of diagnostic tests were performed to make sure that the data collected for this study did not, in any way, violate the assumptions underlying the regression model. In running these tests, the natural logarithms of number of agents, number of transactions and value of transactions were used. In particular, the tests sought to test the following conditions; linearity, normality, heteroscedasticity and multicollinearity.

4.10.1 Linearity

A key requirement for the application of regression is that there exists a linear relationship between the predictor variables and the outcome variable. A Pearson correlation analysis was carried out to investigate this assumption. Additionally, the correlational analysis provided pertinent insights in reference to both the direction and strength of relationship among the variables of interest in this study. The results of the correlation are presented in Table 4.2.

Table 4.12: Pearson Correlation Matrix

	Price of Residential Real Estate	Cost of Land	Location	Property size	Cost of finance
Price of Residential Real Estate	1				
Cost of Land	0.55*	1			
Location	0.62*	0.202	1		
Property size	0.51*	0.215	0.301	1	
Cost of Finance	-0.55*	0.432	0.214	0.302	1

* $p < 0.05$

Source: Researcher (2021)

Table 4.12 shows that there were significant linear relationships between the study's outcome variable and predictor variables. In particular the results reveal that there was a moderately strong and positive relationship between price of real estate and cost of land ($r=0.55$, $p<0.05$), location ($r=0.62$, $p<0.05$) and property size ($r= 0.51$, $p<0.05$). A moderately negative

relationship was found between cost of finance and price of residential real estate. Generally, these results show that the assumption of linearity was not violated.

4.10.2 Test for Normality

Normality is an assumption surrounding the application of regression analysis where it is assumed that the dependent variable follows a normal distribution. For this study, the dependent variable was financial depth by credit to the private sector. The normality of this measure was tested using the Shapiro-Wilk tests. The results of this test are displayed in Table 4.31.

Table 4.13: Shapiro-Wilk Test Statistics

	Shapiro-Wilk		
	Statistic (W)	V	Sig.
Price of Residential Real Estate	0.85	7.703	0.221

Source: Researcher (2021)

As shown in Table 4.13, for the Shapiro-Wilk statistics, the associated significance level was greater than 0.05 for financial depth as evidenced by $p=0.221$. Additionally, the Wilk statistic, 0.85 lied between 0 and 1. In light of these results, normality of the financial depth was assumed.

4.10.3 Homoscedasticity

This is the assumption that the variance in the relationship between the outcome variable and predictor variables is constant. The Breusch-Pagan test was used to test this assumption. The results of the test are displayed in Table 4.14.

Table 4.14: Breusch-Pagan Test Results

Breusch-Pagan test	
Observed value	0.64
Critical value	0.25
Df	4
p-value	0.431
alpha	0.05

Source: Researcher (2021)

Table 4.14 shows that the computed p -value was greater than the $\alpha = 0.05$. This indicates that the residuals between the dependent and independent variables were constant. As such, homoscedasticity was assumed.

4.10.4 Multicollinearity

Multicollinearity refers to a scenario when two variables are closely related and as a result, they have an almost perfect relationship with one another. In addition, it renders the variance inefficient and thereby leads to errors in conclusions. The VIF (Variance Inflation Factor) is used to detect for multicollinearity in this study. The results of testing for multicollinearity of the study variables using the VIF method are shown in Table 4.15.

Table 4.15: Multicollinearity Statistics

Variable	Tolerance	VIF
Cost of land	0.98	1.02
Property size	0.94	1.06
Location	0.86	1.13
Cost of finance	0.84	1.19

As a rule of thumb, multicollinearity is present when the tolerance value is 0.01 or less. Additionally, a VIF greater than 10 is indicative of multicollinearity. Table 4.15 shows that the VIF values for all the predictor variables are less than 10, suggesting that multicollinearity was not present among the variables. The tolerance values for all the independent variables are also far in excess of 0.01, further implying that multicollinearity was not a problem.

4.11. Regression Analysis.

Table 4.16: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.669 ^a	.448	.409	.57187

Source: Researcher (2021)

The model summary results show that cost of land, property size, location, cost of finance and zoning regulation explain 40.9 % of the variation in residential real estate price index, while 59.1% of the variation is accounted for by other factors not considered in the study.

Table 4.17: ANOVA

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.915	5	3.783	11.567	.000 ^b
	Residual	18.312	56	0.327		
	Total	37.227	61			

Source: Researcher (2021)

The ANOVA findings on table above signify that the regression model is fit and significant as indicated by the p-value of 0.000, which is lower than the significance value of 0.05. Therefore, the regression equation can be used to model the relationship between the variables.

Table 4.18: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
	-1.072	.697		1.537	.130
Cost of land	.462	.205	.237	2.254	.028
Property size	.434	.192	.228	2.264	.027
Location	.604	.198	.320	3.051	.003
Cost of finance	-.626	.244	-.267	-2.561	.013

Source: Researcher (2021)

As per the Minitab generated output as presented in table above, the equation ($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \epsilon$) becomes: $Y = -1.072 + 0.462X_1 + 0.434X_2 + 0.604X_3 - 0.626X_4 + 0.426X_5$

From the regression model obtained above, a unit increases in cost of land while holding the other factors constant would similarly rise the residential price index (per meter square) by a factor of 0.462, a unit change in property size while holding the other factors constant would increase the residential price index (per meter square) by a factor of 0.434.

Test regression results also show that a unit enhancement on strategic positioning (location) while holding the other factors constant would rise the residential price index (per meter square) by a

factor of 0.604, a unit change in enhanced access to finance by developers would lead to reduction in residential price index (per meter square) by a factor of -0.626.

Results also show that a unit in stringent in zoning regulation while holding the other factors constant would similarly rise the residential price index (per meter square) by a factor of 0.426.

Overall, the findings show that the higher the cost of land, the bigger the property and more strategic the location of a residential real estate, the higher its price. Contrastingly, increasing costs of financing are associated with decreasing prices of real estate.



CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of key data findings, discussions, conclusion drawn from the findings highlighted and recommendation made there-to, the conclusions and recommendations drawn were focused on addressing the objective of the study the researcher had intended to determine effects of cost of land on price for residential real estate in Nairobi Metropolitan Area, to analyze the influence of property size on price for residential real estate in Nairobi Metropolitan Area, to investigate the influence of location on price for residential real estate in Nairobi Metropolitan Area and to assess the effects of cost of development finance on price for residential real estate in Nairobi Metropolitan Area.

5.2 Summary of Findings

5.2.1 Effect of Cost of Land on Pricing for Residential in Real Estate

Assessment on pricing of non apartment properties in upper end, lower mid-end suburb and in satellite towns revealed mixed results. For instance, on upper end locations, the study established that the most highly priced residential real estates within Nairobi Metropolitan Area were located within Riverside and Kilimani, where a Price per Acre on average went for Kenya shillings (Kshs) 135,400,750, both locations were located between 5 and 4 kilometers away from Central Business District.

Second highly priced residential properties were located within lower mid-end suburb that included Kahawa west and along Waiyaki way, in these zones an Acre goes for Kshs 86,722,858, both locations were located between 4.5 kilometers away from Central Business District, further assessment also show that the development total development in Kahawa was West (3000 Sqm) is greater than in Waiyaki Way which had (1800 Sqm).

Assessment on satellite towns also revealed dynamic results, despite both areas being classified under the same category. For instance, the Total development Space for properties located in Thindigua was 5000Sqm while for the in Ruaka was 8000Sqm. Again, the Number of floors for properties in Thindigua was restricted to 4 while for the in Ruaka were 5 in number. Distance from the CBD up Thindigua is 11.3 km while up to Ruaka is 14.5 km.

Although Price per Acre in Karen, Runda, Loresho went on average for Kshs.63,400,750, results show that the total development space per unit for properties varied fatedly in these areas. For

instance, total development space for properties in Karen was 400sqm, Runda 450 Sqm, Loresho 250Sqm indicating low densities while for South C, Ruiru, and Ngong was 1500Sqm. Assessment on distance show that Karen, Runda and Loresho were located 9.6 km, 11.1 km and 10.9 km away from the Central Business District. conversely the sale price per acre in Ruiru and in Ngong went for 86,722,858, these findings also show some deviation sale price per SQM for finished products where by in Ruiru a SQM went for 98,503 while in Ngong the same went for 56, 464.

Cross examination on results from the three zones show that cost of distance from the town centre impacted on pricing of properties within residential real. The further the location from the Central Business District the lower the prices and vice versa. Results show that both the Apartments and Non-Apartments Properties were highly priced in upper end followed by those located within lower mid-end suburb and last in the satellite towns although more amenities were equally provided in the upper end segment.

Descriptive statistics show that land represents a major drawback in homeownership in urban areas of Kenya, multiple land titling and registration mechanisms increases the cost real estate's development and that high land prices, poor systems of land records and a slow registration process discourage potential homeowners. These findings go hand in hand with the research conclusion by Lock (2013) acknowledges the importance of land and stated that land regulation and property titles are at the cornerstone of housing.

Results also show that that supply of land is very limited therefore leading to rise in residential houses prices, house buyers always consider the availability of health and care facilities when making their decision to purchase a house low-cost land can only be located at the periphery of these areas where there is lack of infrastructure and that land for public utility which would be used for low cost housing is also very scarce, the prevalence of education institutions has high impact on the price of a residential property and that accessibility to infrastructure has opened up new opportunities for development of property and this has pushed up values. The results also lend support to the real estate market theory, which postulates that house prices reflect the marginal cost from the seller's side. These findings go hand in hand with the research findings by Stayner (2006) the rising property prices in Kenya in the past before the introduction of the interest rate cap had brought about an escalation in house affordability problems with only few Kenyans who can afford to buy their own homes.

Recreation and leisure facilities in an area leads to an increase in property prices, the military and police presence in the neighborhood has led to an increase in property prices and that Access to major roads and highways has led to an increase in property value. These findings go hand in hand with the research conclusion by Otswana (2013) Land represents a major drawback in homeownership in urban areas of Kenya.

5.2.2 Effect of Property Size on Pricing for Residential Real Estate

Assessment on effect on property size on price for residential real estate in Nairobi metropolitan Area, revealed that a 4-bedroom unit in Apartments located with Riverside area with amenities such as balconies, swimming pool, solar roof panels, backup generator and lift went for Ksh 138,125 per SQM, 3-bedroom unit in Apartments located with Kilimani with similar amenities such as Lift, backup generator, large windows, ample parking space, kids play area cost around Ksh 124,197 per SQM. In South C 3-bedroom unit with kids play area, gym, lift, Dsq, balconies, pantry area went for 103,199, Waiyaki Way a 4-bedroom unit with balconies, backup generator, lift, sensor doors, solar roof panels Went for Ksh 86,783, In Thindigua 2-bedroom unit with Balconies, generator, Borehole, rooftop sitting area, pantry area went for Ksh 99,119 while 2-bedroom unit with similar amenities in Ruaka went for 104,997. These findings support the study conclusion by Gichunge (2017) notes that lack of affordable constructions combined with difficulties in accessing land makes it difficult to expand access to homeownership.

Results on non-apartment properties to erect a 5 bedroomed with amenities such as Private swimming pool, Private Gym, Borehole, Backup generator, underground tanks, sauna, cost Ksh 203,968 per SQM, in Runda properties to construct 6 bedroomed with amenities such as Swimming pool, jacuzzi, gazebo, cctv cameras, large fireplace, generator, gym was valued at Kshs. 249,748 per SQM, in Loresho properties to construct 5 bedroomed with amenities such as Borehole, motion sensors, solar panel, water storage tanks, generator per was valued at Kshs.146,041 SQM. In South C properties to construct 5 bedroomed with amenities such as Solar water heater, large patio, generator, 2 kitchens, intercoms, dhobi area was valued at Kshs.120, 928 per SQM in Ruiru properties to construct 5 bedroomed with amenities such as Garden, gazebo, courtyard, generator, solar panel, borehole was valued at Ksh. 98,503 per SQM and that in Ngong properties to construct 4 bedroomed with amenities such as Generator, solar panel, swimming pool was valued at Ksh.56,464 per SQM. Candas, Kalkan, and Yomralioglu, (2015) location, size of the house, and connection to utility facilities appeared to have significant influence on house rent prices.

The study established that number of bathrooms, number of toilets, and number of floors in the building determines the price of the house, average annual rent income of a house also determines its selling price and that presence of elevators and heating systems also plays a role in price determination. This finding supports the ideas of hedonistic pricing model, which predicts that the physical attributes of a house are important determinants of house prices. These findings concur with the research findings by Chung. (2012). Compared to residential units erected on small and limited spaces, residential properties erected on larger spaces were similarly associated with quality end product features and consequently leading to high pricing.

5.2.3 Effect of Location on Pricing for Residential Real Estate

The study found a significant correlation between access to basic amenities and the pricing of residential prices in Nairobi Metropolitan Area. Results also show that location affects the pricing of residential real estates, and that residential real estate's prices are way high above the middle-class income. These findings go hand in hand with the research findings by Afenyi, (2013) found that location, size of the house, connection to utility facilities appeared to have significant influence on house rent prices.

Property size affects the pricing of residential real estates and that cost of land affects the pricing of residential real estates and that cost of finance affects the pricing of residential real estates. Descriptive results revealed that access to basic amenities (schools, public transport, shopping mall, sports facility and tar surfaces road) on price for residential real estate in Nairobi Metropolitan Area. The finding supports the trade-off theory and hedonistic pricing, which claims that location is an important determinant for house pricing. These findings concur with the research findings by Aluko, (2011) that neighborhood and locational features (proximity to workplace, schools, shopping, and recreation and worship centers) significantly influence on house rent prices.

5.2.4 Effect of Cost of Finance on Pricing for Residential Real Estate

The study established that availability and cost of long-term funding has a major influence on the final cost of the house increase in mortgage rates have led to most potential investors preferring to buy houses in cash rather than take up mortgages and that Access to finance by both the developers and buyers influence pricing of the houses. These findings go hand in hand with the research findings by Brueggeman and fisher (2018) during periods of high interest rates property prices had

a negative correlation with interest rates while during periods of low interest rates property prices had a positive correlation with the interest rates.

When interest rates are high, credit becomes more expensive, making more developers shy away from loan implying Financing cost is therefore one of the key obstacles for the development of large-scale real estate developments. Further the study established that when interest rates are low, developers are more likely to borrow money as doing so costs them less. This finding lends credence to the real estate market theory, which purports that the marginal cost from the seller's side is a key determinant of pricing for houses. These findings support the study conclusion by Stayner (2006) the level of interest rates and the ease with which real estate property can generate income is very essential in pricing of real estate products.

5.3 Conclusions

Based on the study findings, this study concludes that increase in land cost also led to increase in price for residential real estate properties in Nairobi metropolitan area, residential house constructed in areas characterized with high cost of land were too leased at a higher price. Further development land in Nairobi is very limited therefore leading to rise in residential houses prices, this also implies that difficulties in accessing land makes it difficult to expand access to homeownership in Nairobi Metropolitan zone.

The study concludes that property size (densities) had a significant influence on pricing of for residential real estate properties in Nairobi Metropolitan Area. In simple words, pricing of real estate properties also factors in square meters occupies by the erected structure. Higher densities sold relatively lower than where lower densities applied. However, residential units erected on larger densities but associated with quality end product features have higher pricing.

The study concludes that strategic positioning of real estate properties had a significant influence on price for residential real estate in Nairobi Metropolitan Area. In simple words pricing of the real estate properties increases in relation to access to basic amenities such as hospitals, security management, road networks, schools, shopping centers, communication structures amongst many more.

Developer factored in development cost incurred in the process of pricing for residential real estate in Nairobi Metropolitan Area.

5.4 Recommendations

5.4.1 Policy

The government should reduce the cost of construction through tax reduction and other measures like subsidies that can reduce construction costs. The current taxation system should be reviewed to avoid the double taxation with particular reference to the construction materials to control the housing prices.

The government through the Central Bank should control the interest rates since that would allow for more borrowing in the proper development market. The reduction on construction rates has been attributed to high interest rates in the region that discourages individuals from borrowing to aid the property development.

The government should find ways of activating economic activity to raise GDP that would economically empower the public towards property development. Low per capita GDP has been found by the researcher to lower the rate house construction. The government should improve on the measures of economic empowerment to the citizens since this would control the housing prices.

5.4.2 Practice

Even though the pricing of real estate properties (per meter square) was found to be partially guided by land acquisition cost, it is paramount for the real estate management to capture the true value of the land. In other words, the valuation process must be up clear and uncorrupt so as to avoid instances of property overpricing. Authorities should also proactively rezone their jurisdictions as part of control land overpricing.

In order to reap maximum value, the way developers utilize the size of land acquired becomes paramount. In this light, property developers must collaborate with their architectures so as to give them the best design that factors in all customer preferences and utilize zoning parameters to the best and highest use concept.

Given that the cost of finance was found to play a significant role in property pricing, it's therefore important for the financial institution to chip in and bring the necessary alleviation. For instance, the government through the central bank can ensure that the interest rates since they were found to a significant effect on residential real estate prices in Kenya.

Irrespective of the target groups, real estate companies must find Strategic location to set up their products. This becomes important owing to the fact that access to basic amenities (proximity to

workplace, schools, shopping, and recreation and worship centers) was found to play a significant role in client choice as well as on the product pricing.

5.4.3 Suggestion for Further Research

The focus of this study was to assess the determinants of developers pricing for residential real estate in Nairobi Metropolitan Area. Similar studies may focus on effect of interest rate capping on residential real estate property prices in Kenya, factoring aspects such as effect of money supply, economic growth and inflation. It also important to assess the effects of exchange rates, foreign direct investments, unemployment, and industrial production on residential real estate prices in Kenya.



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APPENDICES

Appendix I: Introduction Letter **JOHNSON DENG**

P.O. Box 3662- 00100

Nairobi

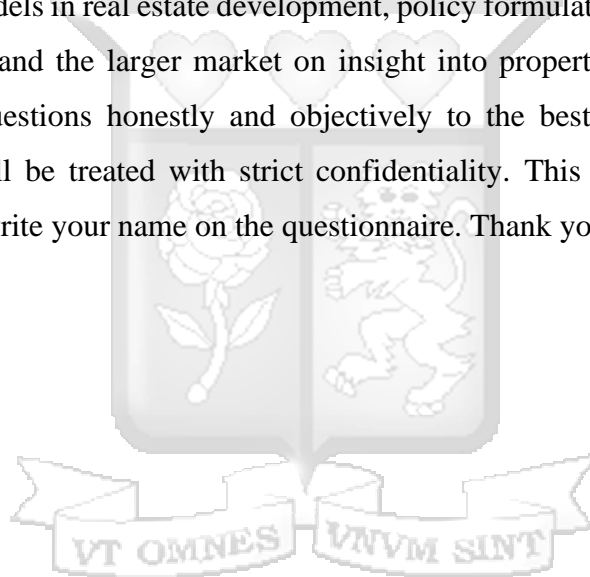
Dear Respondent,

Re: Data collection for research study

Thank you for agreeing to take part in this survey. I am a student at **Strathmore University Business School**. I am conducting an investigation on DETERMINANTS OF DEVELOPERS PRICING FOR RESIDENTIAL REAL ESTATE IN NAIROBI METROPOLITAN AREA. Your participation in this survey will be of significance to the built environment in Kenya. It will assist in developing pricing models in real estate development, policy formulation on tax matters, zoning and planning regulation and the larger market on insight into property product pricing. Please answer the following questions honestly and objectively to the best of your knowledge, the information obtained will be treated with strict confidentiality. This survey will take 7 to 10 minutes. Please do not write your name on the questionnaire. Thank you for your acceptance and support.

Your's Faithfully

JOHNSON DENG

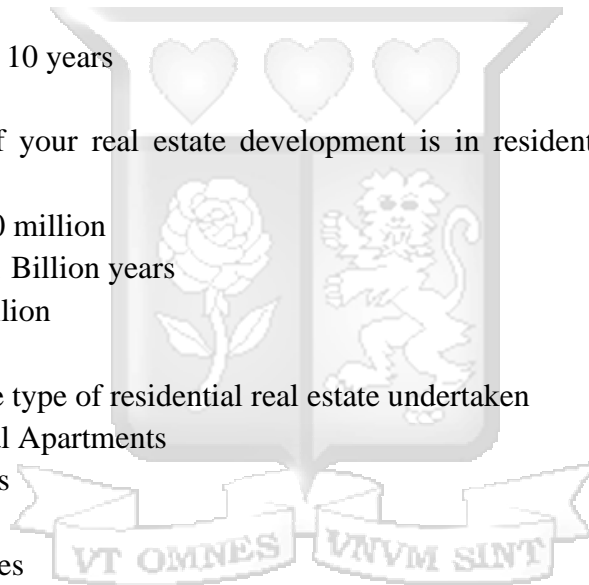


Appendix II : Questionnaire

The purpose of this Questionnaire is to seek answers on Determinants of Developers Pricing for Residential Real Estate in Nairobi Metropolitan Area: Confidentiality on the information which the respondents will provide is guaranteed, and will be used for academic purposes only. Please tick () the box that matches your answer to the questions and give the answers in the spaces provided as appropriate.

PART A: DEMOGRAPHIC INFORMATION

1. Name of the Firm-----
2. How many years have you been in real estate development?
 - a. Less than 1 year
 - b. 1-5 years
 - c. 6-10 years
 - d. More than 10 years
3. What portfolio of your real estate development is in residential real estate (in Kenya Shillings)?
 - a. Below 500 million
 - b. 501mn – 1 Billion years
 - c. Over 1 Billion
 - d. Other
4. Please provide the type of residential real estate undertaken
 - a. Residential Apartments
 - b. Bungalows
 - c. Villas
 - d. Maissonates
 - e. Other
5. How many projects have you launched to the market as per the below provided time spans?
 - a. Less than 1 year
 - b. 1-5 years
 - c. 6-10 years
 - d. More than 10 years
6. Number of staff in organization



7. Kindly indicate the type of properties you mainly provide (For developers only)

Low Cost Residential []

Middle Income Residential []

High end Residential []

Other [] Specify



PART B: COST OF LAND, LOCATION AND ZONNING

Please fill in the below table appropriately on the residential real estates in your portfolio

Apartments Properties

Property ID	Distance from Central Business District (CBD) in Kilometres	Total development Space	Price Per Acre	Number of floors	Sale Price per SQM in KSH	Zone – Indicate number as per Local Authority ordinance
1						
2						
3						
4						
5						
6						

Non-Apartments Properties

Property ID	Distance from Central Business District (CBD) in Kilometres	Total development Space	Price Per Acre	Number of floors	Sale Price per SQM in KSH	Remarks
1						
2						
3						
4						
5						
6						

Indicate, by ticking appropriately, the effects of cost of land on pricing of residential real estates.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The supply of land is very limited therefore leading to rise in residential houses prices					
Land for public utility which would be used for low cost housing is also very scarce					
Multiple land titling and registration mechanisms increases the cost real estate's development					
Low-cost land can only be located at the periphery of these areas where there is lack of infrastructure					

Land represents a major drawback in homeownership in urban areas of Kenya					
High land prices, poor systems of land records and a slow registration process discourage potential homeowners					

Indicate, by ticking appropriately, the effects of location on pricing of residential real estates.

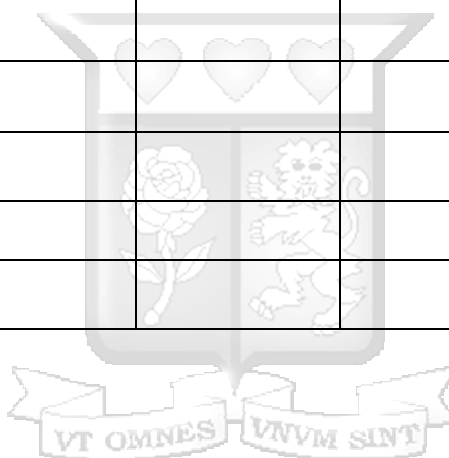
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Access to major roads and highways has led to an increase in property value					
Accessibility to infrastructure has opened up new opportunities for development of property and this has pushed up values.					
The military and police presence in the neighborhood have led to an increase in property prices					
House buyers always consider the availability of health and care facilities when making their decision to purchase a house					
The prevalence of education institutions has high impact on the price of a residential property					
Recreation and leisure facilities in an area leads to an increase in property prices					
The existence of places of worship such as churches and mosques have led to an increase in the value of real estate					

PART C: PROPERTY SIZE

Indicate the following information in relation to the size of property units in your portfolio

Apartments Properties

Property ID	Number of bedrooms	Size in SQM	Sale Price per SQM	Other amenities e.g. balconies, swimming pool
1				
2				
3				
4				
5				
6				



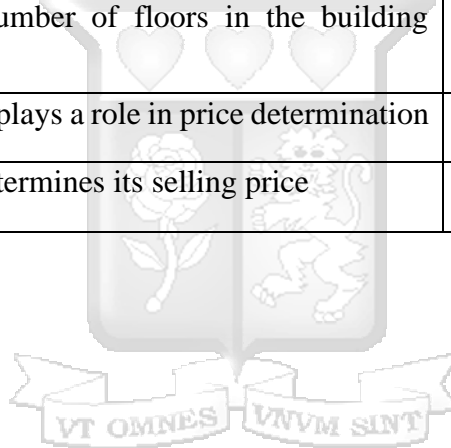
Non-Apartment Properties

Property ID	Number of bedrooms	Size in SQM	Sale Price per SQM	Other amenities e.g. balconies, swimming pool
1				
2				
3				

4				
5				
6				

Indicate, by ticking appropriately, the effects property size on pricing of residential real estates.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Number of bathrooms, number of toilets, number of floors in the building determines the price of the house					
Presence of elevators and heating systems also plays a role in price determination					
Average annual rent income of a house also determines its selling price					



PART D: COST OF FINANCE

Fill in appropriately, the effects of cost of finance on pricing of residential real estates.
What is your cost for financing for your portfolio?

				Source of Funds		Cost of money per annum			
Property ID	Type of property (Apartment or Non-Apartment)	Total Cost of Development	Price of unit per SQM	Bank	Other (Specify)	Below 10%	11% - 15%	15%- 20%	Above 20%
1									
2									
3									
4									
5									
6									

Indicate, by ticking appropriately, the effects of cost of finance on pricing of residential real estates.

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Access to finance by both the developers and buyers influence pricing of the houses					
When interest rates are low, developers are more likely to borrow money as doing so costs them less					
When interest rates are high, credit becomes more expensive, making more developers shy away from loans					
Availability and cost of long-term funding has a major influence on the final cost of the house					

Financing cost is therefore one of the key obstacles for the development of large-scale real estate developments					
Increase in mortgage rates have led to most potential investors preferring to buy houses in cash rather than take up mortgages.					

PART E: AMENITIES

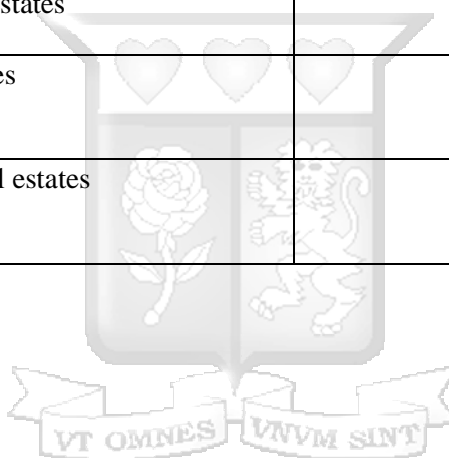
Indicate the distance of the following amenities from the locations of your property portfolios

	Amenities (distance in KM)					
Property ID	Schools	Shopping mall	Sports facility	Tar surfaces road	Public transport	Other – Indicate and distance

PART F: PRICING OF RESIDENTIAL REAL ESTATES

Indicate, by ticking appropriately, on the following statements on pricing of residential real estates

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Residential real estate's prices are way high above the middle-class income					
Cost of land affects the pricing of residential real estates					
Property size affects the pricing of residential real estates					
Location affects the pricing of residential real estates					
Cost of finance affects the pricing of residential real estates					

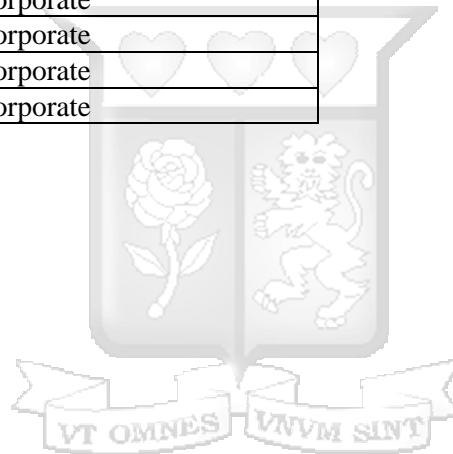


Appendix III: LIST OF DEVELOPERS FROM KPDA 2018

I PROPERTY DEVELOPERS		
NO.	COMPANY NAME	KPDA CATEGORY OF MEMBERSHIP
1	Acorn Management Services Ltd	Corporate
2	AHCOF Investments (Kenya) Ltd	Corporate
3	Amazon Projects Ltd	Corporate
4	Amboseli Court Ltd	Corporate
5	AMS Properties Ltd	Corporate
6	Bahati Ridge Development Ltd	Corporate
7	Blueline Properties Ltd	Corporate
8	Camelot Consultants Ltd	Corporate
9	Century City Property Ltd	Corporate
10	Cheriez Properties Ltd	Corporate
11	Chigwell Holdings Ltd	Corporate
12	Cytonn Real Estate	Corporate
13	Coral Property International Ltd	Corporate
14	Daykio Plantations Ltd	Corporate
15	Dewbury Ltd	Corporate
16	Dunhill Consulting Ltd	Corporate
17	Elegant Properties Ltd	Corporate
18	Elm Ridge Ltd	Corporate
19	Endless Africa Ltd	Corporate
20	Enkavilla Properties Ltd	Corporate
21	Fairdeal Development & Infrastructure Ltd	Corporate
22	Fedha (Management) Ltd	Corporate
23	Golden Compass Ltd	Corporate
24	Heri Homes Properties Ltd	Corporate
25	HF Development and Investments Ltd	Platinum
26	Home Afrika Ltd	Corporate
27	House and Homes Ltd	Corporate

28	Homescope Properties Ltd	Corporate
29	Jenga Ventures Ltd	Corporate
30	Immensy Holdings Ltd	Corporate
31	INFPAC Ltd	Corporate
32	Jabez Properties	Corporate
33	Kamhomes Investments Ltd	Corporate
34	Karibu Homes	Corporate
35	Karume Holdings Ltd	Corporate
36	Kaydee Realty LLP	Corporate
37	Kings Developers Ltd	Corporate
38	Kzanaka Ltd	Corporate
39	Laser Property Services Ltd	Corporate
40	Leo Capital Holdings Ltd	Corporate
41	Lordship Africa	Corporate
42	Manrik Holdings Ltd	Corporate
43	Meera Construction Ltd	Corporate
44	Mlima Construction Company Ltd	Corporate
45	MML Turner & Townsend	Corporate
46	Mugumo Developments Ltd	Corporate
47	Natureville Homes	Corporate
48	Norcent Projects Ltd	Corporate
49	Optiven Ltd	Corporate
50	PDM (Kenya) Ltd	Corporate
51	Pioneer Holdings (Africa) Ltd	Corporate
52	Prissy Apartments Ltd	Corporate
53	Prism Residential Ltd	Platinum
54	Realux Holdings Ltd	Corporate
55	Rozana Properties Ltd	Corporate
56	Sayani Investments Ltd	Corporate
57	Sherry Blue Properties Ltd	Corporate
58	Shreeji Development Ltd	Corporate
59	Sigimo Entreprises Ltd	Corporate
60	SJR Properties Ltd	Corporate
61	SLOK Construction Ltd	Corporate

62	Sohail Developments Ltd	Corporate
63	Soma Properties	Corporate
64	Superior Homes Kenya Ltd	Corporate
65	14Trees Kenya Ltd	Corporate
66	Tatu City Ltd	Corporate
67	Tecnofin Kenya Ltd	Corporate
68	The Combined Warehouses Ltd	Corporate
69	The Epic Properties Ltd	Corporate
70	The GoDown Arts Centre	Corporate
71	Tilisi Developments Ltd	Corporate
72	Trident Estates Ltd	Corporate
73	Username Properties Ltd	Corporate
74	Unity Homes Ltd	Corporate
75	Vaal Real Estate Ltd	Corporate



[illegible]

Appendix V: Ethical Licenses

16th June 2020

Mr Denge Johnson
denge.johnson@strathmore.edu

Dear Mr Denge,

RE: Determinants of Developers Pricing for Residential Real Estate in Nairobi Metropolitan Area

This is to inform you that SU-IERC has reviewed and **approved** your above research proposal. Your application approval number is SU-IERC0724/20. The approval period is **16th June 2020 to 15th June 2021**.

This approval is subject to compliance with the following requirements:

- Only approved documents including (informed consents, study instruments, MTA) will be used
- All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-IERC.
- Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-IERC within 72 hours of notification
- Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-IERC within 72 hours
- Clearance for export of biological specimens must be obtained from relevant institutions.
- Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- Submission of an executive summary report within 90 days upon completion of the study to SU-IERC.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) (<https://oris.nacosti.go.ke>) and also obtain other clearances needed.

Yours sincerely,

for Dr Virginia Gichuru,
Secretary; SU-IERC

Cc: Prof Fred Were,
Chairperson; SU-IERC



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Email info@strathmore.edu www.strathmore.edu



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