THE DETERMINANTS OF REAL ESTATE PROPERTY PRICES:
THE CASE OF KIAMBU MUNICIPALITY IN KENYA.

BY

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DECLARATION

This research project is my original work and has not been submitted for a degree in any other university.

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This research project has been submitted for examinations with my approval as university supervisor.

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DEDICATION

I wish to dedicate this work, first and foremost, to the Almighty God, for the gift of life, his grace and endless love.

And

To mum and dad for your parental love and support and to all my brothers and sisters for your understanding, support and encouragement, it means a lot to me. I love you all and God bless you abundantly.

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LIST OF ABBREVIATIONS

CMA: Competitive Market Analysis

DCF: Discounted Cash Flow

GoK: Government of Kenya

PGI: Potential Gross Income

U.S: United States of America

NYT: New York Times
ABSTRACT

The study was set to establish the determinants of real estate property prices: the case of Kiambu municipality in Kenya. The study adopted survey design and primary data was collected using questionnaires. The data was analyzed using frequencies, percentage means, and regression and correlation analysis.

The study found that most parcels of lands were acquired through purchase and inheritance and further developed mainly through bank loans, mortgage and Sacco loans. Buyers considered the location of the land/house near the tarmac and price when buying land. The demand for the plots was influenced by neighborhood price offer and the fact that so many people would like to buy land in the neighborhood. It was also noted that agents plays a key role in determination of price of real estates in the area, that is, the broker/ agent showed me many other pieces of land/houses, I bought my property through an agent/ broker and Real estate agents/brokers ask for more than they should in commissions.

The study used regression analysis to find the association between purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices and real estate property prices. Forecasting model was developed of this significant \((R^2 = 78.9\% >70\%)\). All the independent variables were also individually linearly related with the dependent variable thus a model of four predictor variables was used to rate real estate property prices in Kiambu Municipality in Kenya. The study found out that the key determinants of real estate property prices in Kiambu Municipality in Kenya were location of a real estate property and realtors influence on the prices.

The study concluded that prices in the real estate market are dictated by a different set of forces unlike other markets where price are determined by forces of demand and supply. From the study it was recommended that further research should look at the determinants of real estate property prices in other parts of the country and a study on comparison between the property prices in urban and rural areas should be carried out.
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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Real property or real estate refers to a particular type of good, land or resources that are not physically moveable (Harvey 1981). The immobility aspect of land and landed resources distinguishes it from other goods and services. Real estate consists of physical land as well as structures and other improvements that are permanently attached to it (Miles et al, 1994).

Real estate is a business not a profession (Gerald 2004). It is an enormous business and plays a crucial part in the country’s economy. Real estate is divided into residential, commercial and agricultural. There will always be more people but there will never be more land. Each of us at some time in our lives becomes involved with real estate since we all need shelter; we either rent or purchase a place to live. According to (Njiru 2003), there are usually hundreds of forces at work many unseen which culminates in a selling price for a house or a piece of land. He points out that real estate sellers try to sell for as much as they can while buyers try to buy for as little as they can. Agreements may work out from there until the final selling price is agreed upon. Research finding by Antonio (2006) indicates that real estate accounts for a large share of wealth, about 33% and gross domestic product of about 11% in the United States of America.

Theory of price asserts that the market reflects the interaction between two opposing considerations. They show that on one side are demand considerations which is based on marginal utility, and on the other side are supply considerations based on marginal cost. An equilibrium price is equal to marginal utility from the buyer’s side and marginal cost from the seller’s side (Njiru 2003). There are two kinds of sellers (Capozza et al., 2004); those who can afford to wait for as long as it is necessary to sell at fair market values and those who cannot wait but have to sell more quickly due to various constraints.
He notes that, other factors remaining constant, people are assumed to be rational and to allocate their resources such as time and money in ways that maximize their own utilities. Real estate property prices vary from one location to another and from one type of property to another.

There are various factors that determine the prices of real estate property prices, these are: the location of real estate properties that is where the property is located whether it is near the road, near a shopping center or which part of the city influences the price. Another factor is the land developer; they influence prices in that the most experienced developers make innovations in the housing industries where they construct modern houses with swimming pools, boreholes and other social amenities which hike the prices.

Another factor that determines the price of the property is the purchasing power of the buyers. Buyers may be willing to buy a property but they do not have the ability to do so. This influences property prices in that the developers should put into consideration the buyer’s income and build structures that the buyers will afford, otherwise they will end up waiting for long to find a suitable buyer for their property or they will have to sell at lower prices hence not able to make any profit which undermines their reason for being in business. Another major factor influencing prices is the demand for real estate property. This influences the property in that when the demand is high and the supply is less the prices will go up since there is more buyers than the market can offer.

There is a difference between what the property is worth (market value) and what it cost to buy it (price). A price paid might not represent that property's value at all times. This is because there could be special considerations between the buyer and the seller where one party had control or significant influence over the other party. At other times, a buyer may willingly pay more than the generally accepted market value if his subjective valuation of the property was higher than the market value.
1.1.1 Real Estate in Finance

Mcleary et al (1988) argues that real estate is part of an integrated financial market and efficient financial decisions must be made within this context. Moreover real estate forms a substantial part of the world’s wealth. According to Ibbotson Associates, as quoted in Wurtzebach et al (1995), real estate is made up of nearly 50% of the world’s total wealth in 1991. He further quotes a 1995 research by analyst David Hartgell and Mike Miles on real estate that shows a world value of over US$ 3 trillion for commercial estate and over US$ 9 billion total loans and advance. In Nairobi, land alone is estimated to have value of Ksh. 140 billion (Njiru, 2003) and the building and construction industry is the 4th biggest debtor to the Kenyan banking sector accounting for 20% of the industry’s Ksh. 284 billion total loans and advance.

1.1.2 Real Estate Value

To determine real estate property value, one needs to compare the property with old listings and active listings. You need to look at the comparable land and homes that have recently been sold (sold listings), land and homes that were for sale on the market but never successfully sold (expired listings), and finally land and homes that are currently for sale (active listings). Unlike the purchases made at retail stores, real estate prices are not fixed. When a buyer searches for a new home he/she does it with the knowledge that he/she has the option that they will ask less for the property than what the seller is asking for. Every aspect of a real estate purchase is negotiable.

According to Cappoza et al (2004), real estate or real property pricing deals with the valuation of real estates and all methods of determining the prices of fixed assets. Prices are limited by factors such as incomes of potential buyers, the cost and the ability to construct new properties to increase supply and demand for rental units. The ability to make payments, borrow money and the rate of interest of borrowing the money are the greatest influence limiting how far prices can go before hitting resistance, this is where prices go above the levels where potential borrowers are unable to qualify.
1.1.3 Real Estate Markets

Real estate markets are considered as an arena that involve negotiations between buyers and sellers who communicate with one another to acquire, manage and dispose off individual real estate products. The real estate market is different from many other markets in several ways (Syagga, 1994). These differences are as a result of the value of individual parcels, government role in the market place, and the way in which people perceive real estate and what they expect from it.

Real estate market is imperfect therefore, affecting the operations of players in the market and thus the strategies they adopt to while pricing. The property market deals with heterogeneous commodities that prevent standardization of the product and its price (Syagga, 1994). Each property is therefore likely to be different from others in terms of position, style, accommodation, type of construction, use, history and degree of obsolescence and these all have a corresponding effect on the value.

1.1.4 Kiambu Municipality

Kiambu Municipality on average occupies an area of 99.4 sq. Km$^2$ (GoK, 2009). It is divided into various administrative boundaries; Ndumberi, Kihingo, Raibai, Kiamumbi, Thindigua, Township, Ng'egu, Karinga, Gathaga and Kanunga. It has two realtors and several estate agents and brokers (GoK, 2010). Information available in both the Kenyan property web sites or with individuals lack details of determinants of the property price, they only give the listed prices. Kiambu Municipality is a fast developing area with modern residential houses and offices. The need to carry out the research was influenced by the realization that real estate properties in the municipality go through bubbles followed by slumps in certain areas and some real estate properties take shorter time while others longer to sell despite them being in similar prevailing conditions.

1.2 Research Problem

Real estate market is one that is characterized by almost predictable cycles of booms and busts. The former are the periods when the prices in market soar almost inevitably, they are followed by other periods when the prices increase. There are people who make a living out of these cycles. These are people whose study of the real estate property
markets has brought them to a point where they can really tell when they are seeing a bust (when prices are low), purchase property at that point and then sell it during the subsequent and virtually inevitable boom, making a substantial profit.

Real estate property contributes a lot to a country’s economy. Demand for housing units continues to outstrip the supply (Kariuki). Real estate property market is booming in Kenya especially because of the growth in the mortgage financing in the country and they are using it as mortgage security. Real estate property negotiations and prices in Kenya are widely determined by brokers and realtors. Kenyan real estate property covers all property categories including single and multi-family residential dwellings, commercial and agricultural land, office space, go-downs and warehouses, retail outlets and shopping complexes (Kariuki, 2006).

Real estate’s prices in Kenya has doubled, even tripled in the past few years and the government wants to know the cause. The past research has shown that the real estate investment is a very important form of investment in Kenya. Literature review reveals that several related studies have been done especially on changes in prices of real estate and real estate bubbles and slumps (Njiru, 2003), but no study has been done specifically on the determinants or real estate prices in Kenya. Prices in most areas are influenced by demand and supply forces, but for some reason, the real estate market prices seem to be dictated by a different set of forces. It is for this reason that researcher sets out to investigate the factors at play in determining real estate property prices in Kiambu municipality, Kenya. This study tries to address the problem by answering the questions: What are the determinants of real estate property prices?

**1.3 Objective of the Study:**

To establish the determinants of real estate property prices in Kiambu Municipality in Kenya.

**1.4 Value of the Study**

This study would be expected to be of significant use to the following: To Kiambu Town Municipal Council, it would help in the policy planning of the town, in boundary setting
of the town and in deed restrictions (which are essential private contractual agreements imposed to use or not use property in certain ways).

To the financial analysts, the study would help with information that would be useful in advising their clients in financial decisions. It would also provoke other researchers to carry out similar research on the effects of price of real estate property in other towns in Kenya.

The real estate agents and real estate brokers would also benefit from this study. They would get information concerning real estate purchase patterns. They would also be able to advice clients (both sellers and buyers) on the real estate price patterns.

The buyers and sellers would also benefit because they would be able to make informed choices in the real estate property investment. They would know what factors to consider and the weight of each when making choices of where to make their investment and what time to invest.

The information would also benefit other scholars and learners who would be seeking information as they use the results obtained from the study. It would serve as an eye opener to them concerning trends of real estate property prices.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter on literature review discusses the characteristics of real estate property, various theories on real estate property pricing based on: The location of real estate properties, the incomes of real estate property investors, the demand and the effect of real estate brokers and realtors. It also details the empirical literature review and the pricing model.

2.2 Characteristics of Real Estate Property

Real estate as earlier defined consists of physical land as well as structures and other improvements that are permanently attached to it. The physical characteristics of real estate include; immobility, unique location and indestructibility. (Charles et al, 1997) explains that the major impact of these physical characteristics is to render real estate as much influenced by the environment since it cannot exist apart from it nor move away from it. On the economic side, real estate is scarce, has long economic life and has synergistic features once developed; a property is worth more than just mere land and building that constitute it.

Properties can broadly be classified into commercial, residential, industrial, agriculture and special properties (Charles et al, 1997). Commercial properties include shops, offices and car parks whereas residential properties include flats, condominiums, massionattes and bungalows. The key factors that affect the value of residential properties are accommodation facilities and the location. A prospective tenant or purchaser considers the nature and extent of accommodation offered and the neighborhood of the property as it affects the general amenities of life, time of travel to work and proximity to schools and shopping centers.
2.3 Theories of Real Estate Property Pricing

2.3.1 Decision Theory
Decision theory is the study of how people model judgment and from that how they determine their choice. These may be probability-based models; loss functions models or other forms of statistical representations of judgments (Nick, 2001). Much of decision theory concentrates on how decisions are actually made based on observation of previous decisions. There is a strong body of evidence that the predicted rational models are rarely observable in practice. What people should do in theory is often very different from the final decision. This might be because the original predictive model was erroneous or that it failed to encompass the whole thought process which influenced the final decision. For example, in property development, a development appraisal might suggest that a particular project should be undertaken to maximize profit on that particular project but business risk may require the developer to focus on a particular location to ensure that they are represented in that market. In this case the rational model is only part of the process.

2.3.2 The Development Process Theory
A development appraisal, also known as residual valuation, is a method used by an analyst/developer to decide whether a proposed development will be viable. In principle, the method of approach is to ascertain the capital value of an estimated future income (sale price of the completed development), and then to deduct from that the cost of all works needed to complete the development to a standard able to command such a future income. In essence it is a quantification of the development process to determine the value of some predetermined benchmark (Wiley-Blackwell, 1996)

2.3.3 Innovation Theory
According to (Schumpeter, 1921), he defined innovation as the critical dimension of economic change. He argued that economic change revolves around innovation, entrepreneurial activities and market power and sought to prove that innovation-originated market power could provide better results than the invisible hand & price competition. He argues that technological innovation often creates temporary monopolies, allowing abnormal profits that would soon be competed away by rivals and imitators. He said that these temporary monopolies were necessary to provide the
incentive necessary for firms to develop new products and processes. Innovation affects real estate pricing because the modern day developers are coming up with modern structures such as bungalows and mansionettes with facilities such as swimming pools, gyms and other recreational facilities. This influences the pricing because the investor will charge them which hike the prices.

2.3.4 Real Estate Property Appraisal or Valuation Theory
Real estate appraisal or valuation is the process of valuing real property. The value usually sought is the property's Market Value. Appraisals are needed because compared to corporate stock, real estate transactions occur very infrequently. Not only that, but every property is different from the next, a factor that doesn't affect assets like corporate stock. Furthermore, all properties differ from each other in their location - which is an important factor in their value. This product differentiation and lack of frequent trading, unlike stocks, means that specialist qualified appraisers are needed to advise on the value of a property. The appraiser usually provides a written report on this value to his or her client. These reports are used as the basis for mortgage loans, for settling estates and divorces, for tax matters, and so on. Sometimes the appraisal report is used by both parties to set the sale price of the property appraised (Baum, 1995).

2.4 Empirical Literature Review on Real Estate Pricing
Different types of real estate have remarkably different cyclic properties. Empirically, it is shown that they do and the question posed as to what might distinguish between property markets where movements are stable to repeated shocks and those undergoing endogenous oscillation (Wurtzebach et al, 1994). The concept of consumer surplus is key in analyzing the price theory. This answers the question; how much is it worth to me to be able to buy some goods at a particular price and how much better of am I than if the goods did not exist.
From the survey done by (Shiller et al 2010), many people buy real estate because they are told by others that it is a good investment. They do not keep track of their investment returns to determine whether their purchase was worth the price. Real estate industry is capital-intensive, however, the real estate pricing model and methods of research do not receive the critical attention they deserve. Lack of adequate data has limited the scope of
empirical research on real estate transactions. Existing data sets include property characteristics, time of sale, initial listing price and sale price. They do not contain information on the buyer’s side of the transaction or on the seller’s behavior between the initial listing and the sale of a property. This explains why most of the empirical literature on real estate transactions has either focused on the determinants of the sale price or on the role of the initial listing price and its effects on time to sell (Hwang, 2002).

In ordinary usage, price is the quantity of payment or compensation given by one party to another in return for goods or services (Wurtzebach et al, 1994). Price can also refer to quantity of payment requested by a seller of goods or services, rather than the final payment amount. The requested price is known as the asking or selling price, while the actual payment is known as transaction price or the traded price (Wheaton, 2003). According to (Hosios 1991), there are a number of lessons that can be drawn from the analysis of consumer choice as it relates to the price. The first is that the value of something is whatever they are willing to give up for it. Two things have the same value if gaining one and loosing the other neither leaves one better nor worse off, meaning they are indifferent between the situation of exchange and the situation after the exchange. The second lesson is that the value of something depends not only on the nature of the goods and preference but also on how much of those goods one has. The third lesson is that the price of something is determined by the amount of something else given up to get it. Finally, one buys something if and only if he considers the cost of that thing to be less its value.

Most real estates are financed by debts and sadly most of the monthly payments go down a black hole of interest. Just like rent, it would be nice if all the real estate mortgage payment grew one’s equity, but it is not the case. Even at low interest rates, a 20-year 4% real estate mortgage payment is 55% interest when the extra costs, for instance property taxes, property insurance, mortgage fee, regular maintenance and sporadic upgrades, higher utilities and higher commuting costs from living further from work are added. Yet, few people consider these costs as part of the price when they set out to purchase a piece of real estate (Minsky, 1992). The post-Keynesian theory of debt deflation is on the demand side which argues that real estate property owners not only...
feel richer but borrow more to increase the value of their property, or borrow money to speculate in real estate property where they borrow money with an expectation that it will increase in value. This last view is associated with (Minsky, 1992) and his Financial instability hypothesis. When the bubble bursts, the value of the property decreases but the level of the debt does not (Kilpatrick, 2007). The burden of repaying or likelihood of defaulting is argued to depress demand and thus leading to the economic slump.

According to New York Times (2009), a record of $560 billion of residential property was sold in China, an increase of 80% from the year before which is a tremendous rise in construction, lending and speculative buying. Housing nationwide rose nearly 200% in 2009. With prices skyrocketing and with clear signs of exuberance everywhere developers are scrambling to build more mansions, villas and high-rise apartments. An investor in Shanghai (NYT, 2009), bought 54 apartments in a single day. A villa sold for $30 million in 2008 and in December a consortium of developers paid more than $3.5 billion for a huge tract of land in Guangzhou: an important trading center as well as a busy port and the capital city of the province of Guandong; one of the highest prices paid for any property anywhere.

According to (Shiller et al, 2010), the United States is currently experiencing a housing bubble. Prices of houses peaked in early 2005 and started to decline in 2006 and 2007. In 2008 the Case-Shiller (2010) home price index reported the largest price drop in its history. In 2006 and 2007 there was reported increased rates among U.S. homeowners which led to a crisis in August 2008 for the sub prime, mortgage, credit and foreign bank markets. In October 2007, the U.S. secretary to the treasury urged owners to pay their mortgages as their low introductory rate mortgages reverted to regular interest rates. Yale economist Robert Shiller warned that home prices appear overvalued and that the correlation could last for years with trillions of dollars of home value being lost. Greenspan also warned of large double digit declines in home values which is larger most people expect (Hosios, 1991).

Real estate in Philippines according to (Maxwel et al, 1997) varies in prices due to many factors. Among these factors, there are three that have the greatest influence. These are:
**Location:** The location of real estate in the Philippines has one of the most effects on the real estate prices. Usually, the closer the land is to commercial centers or recognized vocational spots, the more expensive the land becomes.

**Accessibility:** Roads and other infrastructure cost a great deal of money to build and maintain that is why land supported with paved streets cost more than lands surrounded with dirt roads.

**Land developer:** Real estate prices are also affected by the companies that develop them. The more popular the real estate company is, the more expensive the property is. This is because bigger and more widely recognized realty companies invest large sums of money on quality service and infrastructure in order to provide prime real estate and service smaller companies offer only real estate, the bigger companies offer land, road and other amenities. They also have a greater amount of experience with land management and development than smaller and newer competitors.

South Africa for instance, has achieved many successes including greater political stability and greater economic freedom. Research Worldwide.com published results of its annual survey which showed that property investments in South Africa showed an actual total return of 15.1% in 2009. South African real estate outperformed sixteen other major countries (Guntermann et al 2010). The real estate boom in South Africa and low interest rates continues to encourage home owners to feel confident and spend buying those houses for sale, farms for sale and commercial property for sale (Guntermann et al 2010).

### 2.5 Price Determination for Real Estate Property

#### 2.5.1 How to Set a List Price for a Real Estate Property

Setting the real estate list price of property involves evaluating the property as well as the various conditions and financial factors. It is very important to price property at a competitive market value right when listing it. When people search for properties, they often use the pricing parameters. After having looked at a few homes, buyers begin to understand the market values. The market is so competitive that even overpricing by a few thousand dollars could mean that a house will not sell. That means that the seller
will have to put him/herself in the buyer’s shoes when pricing a real estate. If he/she clings to what he/she thinks it is worth he/she may end up holding it for longer than expected (Hwang, 2002).

Real estate property buyer’s shop by comparison, they preview properties in the areas they are looking and the price they can afford (Miles, 1994). Buyers typically base their selection of a house for instance on what’s most appealing to their personal tastes but also what they feel is the best value based on all of the houses they have seen (Elli et al., 2010). So it is necessary to consider this when setting a list price for a house. The following additional pricing factors need to be considered as well (Hutchison, 2005): If a seller set the prices too high, the house will not be selected for showing by realtors. Even though his may be much better, it needs to be priced appropriately and in comparison to other houses in the neighborhood. What buyers and their agents see is a property that simply appears overpriced in comparison to other properties in the community and too expensive to be considered. If real estate is too low, the seller will short-change himself. His property will sell promptly, but he may make less on the sale than if he had set a higher price and waited for a buyer who was willing to buy at that price.

According to Kilpatrick, (2007), no matter how attractive and polished a piece of real estate is, buyers will be comparing its price with other real properties in the market. The seller’s best guide is a record of what the buying public has been willing to pay in the past few months for property in his neighborhood (Hutchinson, 2005). Realtors can furnish data on sales figures for those comparable sales and analyze them to help him come up with a suggested listing price. The decision about how much to ask for a particular property is always the seller’s.

2.5.2 Modeling of Real Estate Intermediaries

There are a number of possible services that real estate agents provide. The real estate agent has the ability to include a seller’s property in a large database of property for sale, called the multiple listing service, which with other types of advertising, can help to increase the rate of arrival of potential buyers, and as a result the new arrivals are better informed resulting in higher rates of offers (Quigley, 1991). The real estate agent is an expert on conditions in the local property market, and can therefore aggregate
information and provide useful advice to the seller about what lists prices are appropriate. Real estate agent also provide valuable services through access to the multiple listings services by helping to direct their search more efficiently to the property in their desired location, style and price range (Quan, 1991)

The real estate commission is typically 6% in the U.S., when a sale occurs between a buyer and seller who are both represented by their own real estate agents. This commission is split 50/50 between the buying and selling agents. There are difficult economic issues arising from the possibility of multi-equilibrium when real estate agents are introduced, and related econometric issues of how to infer causality given the patterns of self-selection in the decision of whether or not to use real estate agent (Quan, 1991)

In particular, until recently, the vast majority of properties have been sold via real estate agencies and the properties that are sold by the owner may not be typical of the overall population of properties for sale. It might be the case that beliefs about the power of real estate agents are self-confirming. That is, if sellers believe that they are unlikely to be successful unlike they hire a real estate agent, then they will do so and most of the good homes and land will be listed with real estate agents. If buyers also believe they will not be able to find out about good properties unless they search the multiple listing services, then the sellers’ belief will be confirmed and the vast majority of transactions will be mediated by real estate agents (Wurtzebach, 1994).

2.5.3 Competitive Market Analysis (CMA)

The list of comparable sales the Realtor provides, along with data about other property in the neighborhood that are presently on the market is used for a Comparative Market Analysis (CMA). To help in estimating a possible sales price for a real estate, the analysis will also include data on near by the property that are presently on the market as well as those which failed to sell in the past few months, along with their list prices (Case et al, 2010). A CMA differs from a formal appraisal in several ways (Case et al, 2010). One significant difference is that an appraisal will be based on past sales and will not take into account those properties currently listed. An appraisal is done for a fee while the
CMA is provided by the realtor. For the average home sale for instance, a CMA is all the information the seller will need to help in setting a proper prices.

2.5.4 Return on Real Estate

Investor put their money in real estate for a return, which includes both income (usually monthly rent) and changes in market value (Mcleary et al, 1988). Whereas the income aspect of total return is relatively straight forward, price appreciation is much more difficult to determine owing to the infrequent trading of property (Wurtzebach et al, 1995). The income component consists of potential gross income (PGI) which is the income that is possible if all the space is leased at the projected rent level plus any income from other sources such as goodwill (Mcleary et al, 1988). PGI is estimated by considering the rent received on comparable properties as well ass the historic rent, if any, received on the subject property. Outgoings according to Syagga (1994), are the periodic costs incidental to the ownership of property and should be deducted from potential gross rent in order to get net rent that is the net operating income of the investment.

2.6 Real Estate Valuation

Real estate valuation is the practice of developing an opinion of the value of real property, usually its market value (Syagga, 1994). It is essential to distinguish between two valuation exercises namely market valuation which attempts to assess the price at which property would likely sell at its offered for sale on the open market and investment appraisal which assess the inherent value of a property for the purpose of making investment decisions.

The need for valuation arises from the heterogeneous nature of property as an investment. No two properties are identical and all properties differ from each other in their location and other factors (Njiru, 2003). In property investment appraisal the valuers should make explicit allowance for risk and the principal variables affecting future return, particularly the prospects of rental growth and obsolescence (Syagga, 1996). This implies a discounted cash flow (DCF) type of analysis: Discounted cash flow presents value of an
investment as discounted expected future income at a rate that reflects the quality (in terms of risk, liquidity, expenses, etc) of the investment (Maggin et al., 1998)

The DCF concept can be expressed as follows:

\[
DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \cdots + \frac{CF_n}{(1+r)^n}
\]

Where;

DCF = Discounted Cash flow
CF1, 2, 3 = Expected net rental incomes
r = Investors target or required return per period

The model can be expressed in such form as to allow for rent revenues to reflect explicitly the valuers’ expectations for such variables as rental growth and depreciation and to allow for the likelihood that rates of growth, obsolescence and the target return vary overtime. The process of market valuation can also be a process of comparison. In most cases it is neither necessary nor desirable to undertake any analysis of variables that determine the value. The best evidence of the value of a subject property is the value of closely comparable properties as provided by sales in the open market.

According to (Syagga, 1994) one very appropriate market value determining model is the comparative sales method of valuation. It is based on the comparison of the property to be valued with similar properties and the prices achieved for them, taking into account the differences between them. The comparability is based on the use of the property, location, site area, site conditions, physical properties of the building and income related factors. The most critical aspect of comparative sales method is what constitutes comparability and since real property transactions are fairly secretive, it might be more difficult than thought to be good comparative sale.

2.7 Conclusion

Real estate investment is a very important form of investment in Kenya. Investors are faced with the task of evaluating real estate investments and properly managing them. Research on real estate pricing in Kenya still lags far behind. Reliable data on the
property is still extremely difficult to obtain as property managers are often unwilling to disclose it either for confidentiality purpose or to avoid losing out to competition. While real estate continues to significantly impact investors in Kenya, they do not have real information on the pricing to enable them invest wisely. From the review some investors buy property for the sake and because they hear that they are profitable. It is for this reason it is important to educate them on the factors that influence real estate pricing that will guide them in making proper and informed decisions when it comes to investing in real estate properties.

Real estate is a major component of the economy, and has historically been subject to large and widespread fluctuations. A rapid rise in real estate prices and rents based on future rather than current benefits (induced by public goods not offset by the public collection of rent) is bound to affect business profitability; the question of its extent is an empirical matter. Historical data from the U.S., Great Britain, Germany, and other countries have shown that real estate booms have preceded major depressions. The construction industry plays a major role in creating the boom and subsequent bust, and monetary, regulatory, and public-works accommodation by government have induced and accommodated the speculative booms. The theory that the major real estate cycles, accommodated by monetary inflation, have significantly contributed to the major depressions is consistent with the historical record.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction
This chapter covers the research design and methodology used in the study in determining factors influencing real estate prices in Kiambu Municipality. It comprised the study design, target population, sample design and size, data collection and procedure.

3.2 Research Design
The descriptive research design was used for this study. This is a scientific study done to describe a phenomena or an object. In this case the phenomenon is determining the factors that influence real estate property prices. Descriptive survey is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Orotho, 2003).

3.3 Target Population
The target population from which the study was undertaken was the real estate owners (i.e. people who own commercial land/or rental (residential/commercial) house(s) within the ten areas of Kiambu Municipality. There are 1,584 owners of property in Kiambu Municipality (GoK, 2010).

3.4 Sampling Design
A sample of 50 respondents was selected through stratified random sampling method. The population was stratified into classes and questionnaires were administered to them. Stratification is the process of dividing members of the population into homogeneous subgroups before sampling. In statistical surveys when sub populations within an overall population vary, it is advantageous to sample each sub population (stratum) independently. The strata should be mutually exclusive: every element in the population must be assigned to only one stratum and the strata should also be collectively exhaustive: no population element should be excluded. Then random or systematic sampling is applied within each stratum. This often improves the representative ness of
the sample by reducing sampling error. It can produce a weighted mean that has less variability than the arithmetic mean of a simple random (Bailey 1987).

3.5 Data Collection Method

Data was derived from primary source. The data was collected using questionnaires. The sampled people filled the questionnaires provided while being assisted by research assistants where they were unable to interpret the questions during any scheduled meetings, otherwise the research assistants dropped and picked the questionnaires as agreed. The questions were both closed and open ended and covering the four independent variables (location of real estate, the demand for real estate, the influence on prices by realtors and brokers and the purchasing power of the buyers) were used to obtain responses.

3.6 Data Analysis

This involves interpreting information collected from respondents when the questionnaires are completed by the respondents. Data analysis was carried out by use of simple mean, percentages, standard deviations, regression and correlation analysis by use of computer software application known as Statistical Package for Social Sciences (SPSS) Version 17.

Regression analysis was used to come up with the model expressing the relationship between the dependent variable (real estate prices) and independent variables (.purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices) A multiple regression model was developed to describe the relationship between the dependence and independent variable. The regression equation assumed the following form:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e \]

Where:

- \( Y \) – Real estate property prices
- \( X_1 \) - Location of a real estate property
- \( X_2 \) – Purchasing power of the buyers
X3 – Demand of real estate property
X4 – Realtors contribution to prices
B_0, \beta_1- Regression coefficients
e - Error term

Correlation was used to check the overall strength of the establish regression model and the individual significance of the independent variables.

3.7 Data Reliability and Validity

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials (Allen & Yen, 1979). The results were numbered as the questionnaires are sent out and then grouped into two groups to measure the score for each group. From the two groups, the results will be evaluated for internal consistency. Due to time constraints while undertaking the study it was difficult to repeat the questionnaires to determine repeatability of the study, however, some of the questions in the questionnaires were repeated with slight changes in the wording to evaluate the repeatability of the study.

Validity is defined as the extent to which the instrument measures what it purports to measure (Allen & Yen, 1979). For example test that is used to screen for a job is valid if its scores are directly related to future job performance. Content validity pertains to the degree which the instrument fully assesses or measure the construct of interest. Specifically, raters reviewed all the items for clarity and come to some level of agreement as to which item should be included to the final instrument.
CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1: Introduction

The research objective was to establish the determinants of real estate property prices in Kiambu Municipality in Kenya. This chapter presents the analysis and findings with regard to the objective and discussion of the same. The data was collected from the population of 50 respondents. The findings are presented in percentages and frequency distributions, mean, standard deviations, graphs and tables.

4.2: Characteristics of Respondents

4.2.1: Response Rate

A total of 50 questionnaires were issued out. The completed questionnaires were edited for completeness and consistency. Of the 50 Questionnaires used in the sample, 41 were returned. The remaining 9 were not returned. The returned questionnaires’ represented a response rate of 82%, which the study considered adequate for analysis.

Figure 4.2.1: Response Rate
4.2.2 Distribution by Gender

The respondents were asked to state the gender. As shown in table 4.2.1, 48.8% of the respondents were female while the remaining 51.2% were male.

Table 4.2.1: Distribution by gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>20</td>
<td>48.8</td>
<td>48.8</td>
</tr>
<tr>
<td>Male</td>
<td>21</td>
<td>51.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

4.2.2: Age Bracket

The respondents were asked to state their age brackets. The results are as shown in table 4.2.2

Table 4.2.2: Distribution of respondents by age

<table>
<thead>
<tr>
<th>Age Bracket</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25 Years</td>
<td>4</td>
<td>9.8</td>
<td>9.8</td>
</tr>
<tr>
<td>26-35 years</td>
<td>17</td>
<td>41.5</td>
<td>51.2</td>
</tr>
<tr>
<td>36-45 years</td>
<td>12</td>
<td>29.3</td>
<td>80.5</td>
</tr>
<tr>
<td>More than 45 years</td>
<td>8</td>
<td>19.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

As shown in table 4.2.2, 9.8% of the respondents were of age less than 25 years, 41.5% were between 26-35 years of age, 29.3% were between 36-45 years old and the rest
(19.5%) were over 50 years. On average the majority of the employees are between the age brackets of 26-45 years.

4.2.3: Distribution by Marital Status

The respondents were asked to state their age brackets. The results are as shown in table 4.2.3

Table 4.2.3: Marital status

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>15</td>
<td>36.6</td>
<td>36.6</td>
</tr>
<tr>
<td>Married</td>
<td>19</td>
<td>46.3</td>
<td>82.9</td>
</tr>
<tr>
<td>Window(er)</td>
<td>3</td>
<td>7.3</td>
<td>90.2</td>
</tr>
<tr>
<td>Separated /divorced</td>
<td>4</td>
<td>9.8</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

As shown in table 4.2.3, most of the respondents (46.3%) were married, 36.6% were single, 9.8% were separated/divorced and 7.3% were window(er). This shows that investment in real estate is open to all categories of people.

4.2.4: Distribution by Level of Education

The respondents were asked to state their highest level of education. The results presented in figure 4.2.2.
Figure 4.2.2: Highest Level of Education

![Highest Level of Education](image)

Source: Researcher, 2011

As indicated in figure 4.2.2, majority (78%) of the respondents had college/university degree, 17.1% were secondary school graduates and 4.9% had non formal education.

4.2.5: Distribution by Location

The findings presented in table 4.2.4, indicates that the respondents were drawn from all the areas of the municipality considered in the study. More so majority were living at township area (36.6%), Thindigua area (14.6%), Ndumberi area (12.2%) and Kiamumbi area.

Table 4.2.4: In which area of the municipality do you live?

<table>
<thead>
<tr>
<th>Area</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ndumberi</td>
<td>5</td>
<td>12.2</td>
<td>12.2</td>
</tr>
<tr>
<td>Kihingo</td>
<td>1</td>
<td>2.4</td>
<td>14.6</td>
</tr>
<tr>
<td>Raibai</td>
<td>1</td>
<td>2.4</td>
<td>17.1</td>
</tr>
<tr>
<td>Kiamumbi</td>
<td>5</td>
<td>12.2</td>
<td>29.3</td>
</tr>
<tr>
<td>Thindigua</td>
<td>6</td>
<td>14.6</td>
<td>43.9</td>
</tr>
<tr>
<td>Township</td>
<td>15</td>
<td>36.6</td>
<td>80.5</td>
</tr>
<tr>
<td>Ngengu</td>
<td>1</td>
<td>2.4</td>
<td>82.9</td>
</tr>
<tr>
<td>Karinga</td>
<td>2</td>
<td>4.9</td>
<td>87.8</td>
</tr>
<tr>
<td>Gathaga</td>
<td>1</td>
<td>2.4</td>
<td>90.2</td>
</tr>
</tbody>
</table>
### Table 4.2.5: What size of land do you own within the municipality?

<table>
<thead>
<tr>
<th>Size of Land</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8 of an acre</td>
<td>13</td>
<td>31.7</td>
<td>31.7</td>
</tr>
<tr>
<td>1/4 of an acre</td>
<td>12</td>
<td>29.3</td>
<td>61.0</td>
</tr>
<tr>
<td>1/2 of an acre</td>
<td>9</td>
<td>22.0</td>
<td>82.9</td>
</tr>
<tr>
<td>3/4 of an acre</td>
<td>3</td>
<td>7.3</td>
<td>90.2</td>
</tr>
<tr>
<td>1 acre</td>
<td>4</td>
<td>9.8</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41</strong></td>
<td><strong>100.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

### 4.2.7: Distribution of Respondents by Time of Acquisition of The Land

As can be observed, in table 4.2.6, most (31.7%) of the respondents acquired land within a period of 1 to 5 years ago, 26.8% acquired the land more than 10 years ago, 24.4% acquired the land 6 to 9 years ago and only 17.1% had acquired the land in less than one year ago.
Table 4.2.6: When did you acquire the land?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than 10 years ago</td>
<td>11</td>
<td>26.8</td>
<td>26.8</td>
</tr>
<tr>
<td>6-9 years ago</td>
<td>10</td>
<td>24.4</td>
<td>51.2</td>
</tr>
<tr>
<td>1-5 years ago</td>
<td>13</td>
<td>31.7</td>
<td>82.9</td>
</tr>
<tr>
<td>Less than 1 year ago</td>
<td>7</td>
<td>17.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

4.3: Real Estate and Income

This section covers the question posed to the respondents on the real estate and income in terms of; mode of land acquisition, average price, development status, mode of financing development, average cost of the building, and nature of the building and average total income from the rental houses. Tables, frequencies and percentages were used to present the findings.

4.3.1: Mode of Land Acquisition

The respondents were asked to state their age brackets. The results are as shown in table 4.3.1

Table 4.3.1: How did you acquire the land?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through purchase</td>
<td>26</td>
<td>63.4</td>
<td>63.4</td>
</tr>
<tr>
<td>Inheritance</td>
<td>14</td>
<td>34.1</td>
<td>97.6</td>
</tr>
<tr>
<td>Exchange</td>
<td>1</td>
<td>2.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

As shown in table 4.3.1, majority (63.4%) of the respondents acquired their parcels of land through purchase, 34.1% inherited the land and 2.4% acquired their parcel of land.
through exchange. Of those who purchased the land, the average purchase price varied one purchaser to another within a range of Kshs 200,000.00 to kshs 450,000.00.

4.3.2: Nature of Plot Development.

The respondents were asked to state whether they had either bought or built in their plots. It was evident that most (61%) of the plots have been developed while at the same time significant proportion of 39% of all the plots were yet to be developed.

Table 4.3.2: Have you bought or built rental houses in your plot(s) that are within the Municipality?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>25</td>
<td>61.0</td>
<td>61.0</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>39.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

4.3.3: Modes of Financing the Project

As shown in table 4.3.3, of the plots which had been developed, 48% were developed through bank loans, 20% through mortgage or Sacco loans and 12% through personal savings.

Table 4.3.3: Have you bought or built rental houses in your plot(s) that are within the * if yes, how did you finance the project?

<table>
<thead>
<tr>
<th>Have you bought or built rental houses in your plot(s) that are within the</th>
<th>If the answer for No. 10 above is YES, how did you finance the project?</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3.4: Average Total Income from the Rental Houses

The respondents were asked to state Average total income from the rental houses. As indicated in table 4.3.4, 40% of the developed rental houses plots had an average annual income of less than kshs 1.5 million while the remaining 60% had annual average income of more than kshs 1.5 million.

| Source: Researcher, 2011 |

| Table 4.3.4: What is the average income from your rental houses? |
|---|---|---|---|---|
| | Frequency | Percent | Cumulative Percent |
| Less than 1.5 million | 10 | 40.0 | 40.0 |
| More than 1.5 million | 15 | 60.0 | 100.0 |
| Total | 25 | 100.0 | |

Source: Researcher, 2011

4.4: Real Estate and Location

This section covers the question posed to the respondents on the real estate and location terms of; distance from the tarmac road and Nature of the main road to the land/house. Tables, frequencies and percentages were used to present the findings.

4.4.1: Distance from the Tarmac Road

The respondents were asked to state how far from the tarmac were their land/houses. The results in table 4.4.1 indicated that most of the plots/houses were at a distance of 500 to 1 kilometer from the tarmac road, 24.4% were more than 1.5 kilometers from the tarmac, 19.5% were at a distance of 1 to 1.5 kilometers and 17.1% were 500 meters from the tarmac.
Table 4.4.1: How far from the tarmac is your land/house(s)?

<table>
<thead>
<tr>
<th>Distance</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 500 m</td>
<td>7</td>
<td>17.1</td>
<td>17.1</td>
</tr>
<tr>
<td>500 m-1km</td>
<td>16</td>
<td>39.0</td>
<td>56.1</td>
</tr>
<tr>
<td>1-1.5 km</td>
<td>8</td>
<td>19.5</td>
<td>75.6</td>
</tr>
<tr>
<td>More than 1.5 km</td>
<td>10</td>
<td>24.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

4.4.2: Nature of the Main Road to the Land/House

The respondents were asked to state the nature of the main road to their land/houses. The findings show that 68.3% of the main roads leading to the land/houses were tarmac, 24.4% were all weather roads and 7.3% were dusty roads.

Table 4.4.2: What is the nature of the main road to your land/house?

<table>
<thead>
<tr>
<th>Nature</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarmac</td>
<td>28</td>
<td>68.3</td>
<td>68.3</td>
</tr>
<tr>
<td>All weather</td>
<td>10</td>
<td>24.4</td>
<td>92.7</td>
</tr>
<tr>
<td>Dusty</td>
<td>3</td>
<td>7.3</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

4.4.3: Rating of the Following Predetermined Statements With Respect To Real Estate Location

The respondents were asked to state the extent to which various location variables influenced their choice. The results are shown in table 4.4.3. From the findings to agree/strongly agree; the location of the land/house near the tarmac influenced me to buy it. (Mean of 3.0000) and Price was the main factor I considered before I bought the property (mean of 2.7805). On strongly disagree/disagree extent; I bought the property
because my relatives lived there (mean of 2.1220) and I bought the property because it was near a learning institution (mean of 2.4146).

**Table 4.4.3: Extent to which various location variables influenced their choice of plots**

<table>
<thead>
<tr>
<th>Statements</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>I bought the property because my relatives lived there</td>
<td>2.1220</td>
<td>.52239</td>
</tr>
<tr>
<td>I bought the property because it was near a learning institution</td>
<td>2.4146</td>
<td>.80547</td>
</tr>
<tr>
<td>Price was the main factor I considered before I bought the property</td>
<td>2.7805</td>
<td>.81426</td>
</tr>
<tr>
<td>The location of the land/house near the tarmac influenced me to buy it.</td>
<td>3.0000</td>
<td>.74018</td>
</tr>
</tbody>
</table>

*Source: Researcher, 2011*

**4.4.4: Real Estate and Demand**

The respondents were asked to state the extent to which various variables influence the demand of real estates. The results are shown in table 4.4.4. The respondents unanimously agreed/strongly agreed that Demand for land in my neighborhood has pushed its value upwards since I bought mine (mean of 3.6098) and So many people would like to buy land in my neighborhood (mean of 3.3902).

**Table 4.4.4: Extent to which various demand variables influenced their choice of plots**

<table>
<thead>
<tr>
<th>Statements</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>So many people would like to buy land in my neighborhood</td>
<td>3.3902</td>
<td>.83301</td>
</tr>
<tr>
<td>Demand for land in my neighborhood has pushed its value upwards since I bought mine</td>
<td>3.6098</td>
<td>.58643</td>
</tr>
</tbody>
</table>

*Source: Researcher, 2011*
4.4.5: Real Estate and Estate Agents

The respondents unanimously agreed that; It is difficult to buy land or a house without the help of a broker/agent (mean of 2.6829), The broker/agent showed me many other pieces of land/houses (mean of 2.7317), I bought my property through an agent/broker (mean of 2.8780) and Real estate agents/brokers ask for more than they should in commissions (mean of 3.4390).

Table 4.4.5: Extent to which various statements relates to estate agents and real estate

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is difficult to buy land or a house without the help of a broker/agent</td>
<td>2.6829</td>
<td>1.12781</td>
</tr>
<tr>
<td>The broker/agent showed me many other pieces of land/houses</td>
<td>2.7317</td>
<td>1.00061</td>
</tr>
<tr>
<td>I bought my property through an agent/broker</td>
<td>2.8780</td>
<td>1.09989</td>
</tr>
<tr>
<td>Real estate agents/brokers ask for more than they should in commissions</td>
<td>3.4390</td>
<td>.92328</td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

4.5: Regression Analysis

4.5.1: Correlation Analysis

Two predictor variables are said to be correlated if their coefficient of correlations is greater than 0.5. In such a situation one of the variables must be dropped or removed from the model. As shown in table 4.3.1, none of the predictor variables had coefficient of correlation between themselves more than 0.5 hence all of them were included in the model. The matrix also indicated high correlation between the response and predictor variables, that is, Realtors contribution to prices with the highest correlation followed by Purchasing power of the buyers, Demand of real estate property and Location of a real estate property respectively.
Table 4.5.1: Pearson correlation coefficients

<table>
<thead>
<tr>
<th>Real estate property prices</th>
<th>Location of a real estate property</th>
<th>Purchasing power of the buyers</th>
<th>Demand of real estate property</th>
<th>Realtors contribution to prices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real estate property prices</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location of a real estate property</td>
<td>.551</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchasing power of the buyers</td>
<td>.710</td>
<td>.288</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>Demand of real estate property</td>
<td>.614</td>
<td>.233</td>
<td>.317</td>
<td>1.000</td>
</tr>
<tr>
<td>Realtors contribution to prices</td>
<td>.882</td>
<td>.197</td>
<td>.445</td>
<td>.360</td>
</tr>
</tbody>
</table>

Source: Researcher, 2011

4.5.2: Strength of the Model

Analysis in table 4.5.2 shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) $R^2$ equals 0.789, that is, purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices explain 78.9 percent of Real estate property prices leaving only 21.1 percent unexplained. The P-value of 0.000 (Less than 0.05) implies that the model of Real estate property prices is significant at the 5 percent significance.

Table 4.5.2: Model summary

<table>
<thead>
<tr>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R Square</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>.888(a)</td>
<td>.789</td>
<td>.776</td>
<td>.51038</td>
<td>.789</td>
</tr>
</tbody>
</table>

Source: Researcher, 2011
Predictors: (Constant), purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices. Dependent Variable: Real estate property prices.

Table 4.5.3: ANOVA

<table>
<thead>
<tr>
<th>Source: Researcher, 2011</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>21.772</td>
<td>4</td>
<td>4.354</td>
<td>4.201</td>
<td>.004&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Residual</td>
<td>36.277</td>
<td>36</td>
<td>1.036</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>58.049</td>
<td>41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The probability value (p-value) of a statistical hypothesis test is the probability of getting a value of the test statistic as extreme as or more extreme than that observed by chance alone, if the null hypothesis H₀ is true. The p-value is compared with the actual significance level of the test and, if it is smaller, the result is significant. The smaller it is, the more convincing is the rejection of the null hypothesis. ANOVA findings in table 4.5.3 shows that there is correlation between the predictors variables (purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices) and response variable (Real estate property prices) since P-value of 0.00 is less than 0.05.

4.5.3: Regression Equation

The established multiple linear regression equation becomes:

\[ Y = 1.808 + 1.353X_1 + 0.661X_2 + 0.035X_3 + 0.975X_4 \]

Elasticity

Constant = 1.808, shows that if purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices were all rated as zero, Real estate property prices rating would be 1.808.
\( X_1 = 1.353 \), shows that one unit change in International market strategy results in 1.353 units increase in Real estate property prices

\( X_2 = 0.661 \), shows that one unit change in Product strategy results in 0.661 units increase in Real estate property prices

\( X_3 = 0.035 \), shows that one unit change in Investment strategy results in 0.035 units increase in Real estate property prices

\( X_4 = 0.975 \), shows that one unit change in Strategic review results in 0.975 units increase in Real estate property prices.

**Table 4.5.4: Coefficients of regression equation**

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
<td>3.428</td>
<td>.002</td>
</tr>
<tr>
<td>Location of a real estate property</td>
<td>X_1 1.353</td>
<td>1.409</td>
<td>2.878</td>
<td>.007</td>
</tr>
<tr>
<td>Purchasing power of the buyers</td>
<td>X_2 .661</td>
<td>.775</td>
<td>2.117</td>
<td>.041</td>
</tr>
<tr>
<td>Demand of real estate property</td>
<td>X_3 .035</td>
<td>.037</td>
<td>2.160</td>
<td>.004</td>
</tr>
<tr>
<td>Realtors contribution to prices</td>
<td>X_4 .975</td>
<td>.992</td>
<td>3.678</td>
<td>.001</td>
</tr>
</tbody>
</table>

**Source: Researcher, 2011**
Dependent Variable: Real estate property prices

**4.5.4: Individual Statistical Significance**

Hypothesis statement 1:
Location of a real estate property influence Real estate property prices

Hypothesis statement 2:
Purchasing power of the buyers influence Real estate property prices

Hypothesis statement 3:
Demand of real estate property influence Real estate property prices
Hypothesis statement 4:
Realtors contribution to prices influence Real estate property prices

Table 4.5.5: Hypothesis testing

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>P-Value</th>
<th>Significance level</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_1$: There is no significant relationship between Location of a real estate property and Real estate property prices</td>
<td>.007</td>
<td>.05</td>
<td>Reject $H_1$,</td>
</tr>
<tr>
<td>$H_{1a}$: There is a significant relationship between Location of a real estate property and Real estate property prices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H_1$: There is no significant relationship between Purchasing power of the buyers and Real estate property prices</td>
<td>.041</td>
<td>.05</td>
<td>Reject $H_1$,</td>
</tr>
<tr>
<td>$H_{1a}$: There is a significant relationship between Purchasing power of the buyers and Real estate property prices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H_1$: There is no significant relationship between Demand of real estate property and Real estate property prices</td>
<td>.004</td>
<td>.05</td>
<td>Reject $H_1$,</td>
</tr>
<tr>
<td>$H_{1a}$: There is a significant relationship between Demand of real estate property and Real estate property prices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$H_1$: There is no significant relationship between Realtors contribution to prices and Real estate property prices</td>
<td>.001</td>
<td>.05</td>
<td>Reject $H_1$,</td>
</tr>
<tr>
<td>$H_{1a}$: There is a significant relationship between Realtors contribution to prices and Real estate property prices</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher, 2011
Since all the P-Values for the individual predictor variables less than 0.05, there is enough evidence to support $H_{1a}$ thus there is a significant relationship between the response and each predictor variable.

### 4.6: Discussion of Findings

From the findings, (63.4%) of the respondents acquired their parcels of land through purchase, 34.1% inherited the land and 2.4% acquired their parcel of land through exchange. At the same time 48% of the developed plots were developed through bank loans, 20% through mortgage or Sacco loans and 12% through personal savings.

The study identified the following as the most significance in location of the plot decision; the location of the land/house near the tarmac influenced me to buy it. (Mean of 3.0000) and Price was the main factor I considered before I bought the property (mean of 2.7805). In term of demand the key issues were; demand for land in my neighborhood has pushed its value upwards since I bought mine (mean of 3.6098) and So many people would like to buy land in my neighborhood (mean of 3.3902. In terms of estate agents the main issues were; The broker/ agent showed me many other pieces of land/houses (mean of 2.7317), I bought my property through an agent/ broker (mean of 2.8780) and Real estate agents/brokers ask for more than they should in commissions (mean of 3.4390).

All the independent variables were also individually linearly related with the dependent variable thus a model of four predictor variables could be used to rate real estate property prices in Kiambu Municipality in Kenya. The study found out that there exist a significant relationship between purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices and real estate property prices with the key determinants being; location of a real estate property and realtors influence on the prices.
CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1: Introduction

In this section we discuss the main findings, draw conclusions and make recommendations.

5.2: Summary

The objective of the study was to establish the determinants of real estate property prices in Kiambu Municipality in Kenya. The study used regression analysis to find the association between purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices and real estate property prices. Forecasting model was developed and tested for accuracy in obtaining predictions. The finding of the study indicated that the model was significant. This is demonstrated in the part of the analysis where $R^2$ for the association between purchasing power of the buyers, location of a real estate property, demand of real estate property, realtors influence on the prices and real estate property prices was $78.9\% > 70\%$.

5.3 Conclusions

Real estate property plays a major role in every country’s economy as revealed in the research. In Nairobi, land alone is estimated to have a value of Ksh. 140 billion (Njiru, 2003) and the building and construction industry is the 4th biggest debtor to the Kenyan banking sector accounting for 20% of the industry’s Ksh. 284 billion total loans and advance.

Prices in most areas are influenced by demand and supply forces, but for some reason, the real estate market prices seem to be dictated by a different set of forces. The study revealed that real estate property prices are mainly determined by the location of the real estate property, that is factors such as if the property is near the tarmac or other social amenities greatly influence the price.
The study revealed that the demand for real estate property prices affect the prices in that when the demand outstrip the supply, the sellers increase the prices of the properties. The results further show that real estate property negotiations and prices in Kenya are also determined by brokers and realtors. The brokers and realtors help the investors to make informed decisions by showing them various properties to choose from. The study also found that most parcels of lands were acquired through purchase and inheritance and further developed mainly through bank loans, mortgage and Sacco loans. Real estate property market is booming in Kenya especially because of the growth in the mortgage financing in the country and the investors are using it as mortgage security.

5.4: Recommendations for Policy

Real estate property valuation should be done carefully to determine the correct value of the property and to protect the buyers from being overcharged.

The realtors and agents should have an updated list of real estate property prices, so that they can help the buyers to make informed choices in the real estate property investment by giving them a variety to choose from. The buyers should know what factors to consider and the weight of each when making choices of where to make their investment and what time to invest.

The financial institutions such as banks and others should give more credit facilities like loans and mortgages to the investors to enable them to invest more in the real estate properties.

Buyers should be cautious of the prices charged by the agents and brokers and also the interest rates charges for mortgages and loans from financial institutions.

5.5: Recommendations for Further Research

Researchers and scholars should carry out a research on the comparison between real estate property prices in the rural areas and those in the urban areas, to find out if their prices are affected by similar factors.
Researchers should carry out a research on external and internal factors that influences real estate property prices in other towns and regions in the country and make a comparison.

5.6 Limitations of the Study

The following difficulties were encountered in the execution of the project: Some of real estate property owners did not understand English and they could only communicate in their local language. Others were unwilling to disclose the correct value of their property for fear that they will be exposed to the revenue authority for taxation. Some real estates exchange were done privately, thus it was difficult to get information about their real value from the government records. Some realtors and agents were reluctant to disclose information because of fear that they will loose out to competition.
References


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APPENDIX

QUESTIONNAIRE

Introduction
The objective of this research is to establish the factors that influence real estate property prices in Kiambu municipality in Kenya. Please answer the questions in this questionnaire by inserting "X" in the boxes provided or by filling out the spaces provided as briefly as possible.

SECTION A: PERSONAL INFORMATION

Please tick (✓) the option that corresponds to your answer in each of the following:

1. Gender
   (a) Female ( ) (b) Male ( )

2. What is your age?
   (a) Below 25 ( ) (b) 26 – 35 ( )
   © 36 -45 ( ) (d) Above 45 ( )

3. Marital status
   (a) Single ( ) (b) Married ( )
   © Widow/widower ( ) (d) Separated/Divorced ( )

4. What is your highest level of education?
   (a) Non-formal ( ) (b) Primary ( )
   © Secondary ( ) (d) college/University ( )

5. In which area of the municipality do you live?
   (a) Ndumberi ( ) (b) Kihingo ( )
   © Raibai ( ) (d) Kiamumbi ( )
   (e) Thindigua ( ) (f) Township ( )
   (g) Ngegu ( ) (g) Karinga ( )
   (h) Gathaga ( ) (i) Kanunga ( )

6. What size of land do you own within the municipality?
   (a) 1/8 of an acre ( ) (b) ¼ of an acre ( )
   © ½ of an acre ( ) (d) ¾ of an acre ( )
   (e) 1 acre ( ) (f) Others (specify)…………………………
7. When did you acquire the land?
   (a) More than 10 years ago ( ) (b) (6-9) years ago ( )
   © (1-5) years ago ( ) (d) Less than one year ago ( )

SECTION B: REAL ESTATE AND INCOME

8. How did you acquire the land?
   (a) Through purchase ( ) (b) Through inheritance ( )
   © Through exchange ( ) (d) Others (specify)……………………

9. If (in 8 above) was through purchase, what was the average price? Please state.
   Ksh……………………………………

10. Have you bought or built rental houses in your plot(s) that are within the Municipality?
    (a) Yes ( ) (b) No ( )

11. If the answer for No. 10 above is YES, how did you finance the project?
    (a) Mortgage ( ) (b) Bank Loan ( )
    © Sacco Loan ( ) (d) Personal savings ( )
    (e) Others (specify)……………………………………

12. What was the average cost of the building? Please specify
    Ksh…………………………..

13. What is the nature of buildings?
    (a) Permanent ( ) (b) Semi permanent ( )

14. What is the average total income from your rental houses?
    (a) Above Ksh. 50,000 ( ) (b) Ksh 30,000 – Ksh 49,000 ( )
    © Ksh 20,000 – Ksh 29,000 ( ) (d) Ksh 10,000 – Ksh 19,000 ( )
    (e) Below Ksh 10,000 ( )

15. In Your own estimate, what is the value of your piece of land today?
    Ksh……………………………………

SECTION C: REAL ESTATE AND LOCATION

16. How far from the tarmac is your land/house(s)?
    (a) Less than 500m ( ) (b) 500m – 1 Km ( )
    © 1 Km – 1.5 Km ( ) (d) 1.5 km and above ( )
17. What is the nature of the main road to your land/house?
   (a) Tarmac ( ) (b) All weather ( )
   © Dusty ( )

**PLEASE CIRCLE THE CHOICE THAT CORRESPONDS TO YOUR OPNION IN EACH OF THE FOLLOWING:**

<table>
<thead>
<tr>
<th>Strongly</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. The location of the land/house near the tarmac influenced me to buy it.
   1 2 3 4

19. I bought the property because it was near a learning institution.
   1 2 3 4

20. I bought the property because my relatives lived there.
   1 2 3 4

21. Price was the main factor I considered before I bought the property.
   1 2 3 4

**SECTION D: REAL ESTATE AND DEMAND**

22. So many people would like to buy land in my neighborhood.
   1 2 3 4

23. Demand for land in my neighborhood has pushed its value upwards since I bought mine.
   1 2 3 4

**SECTION E: REAL ESTATE AND ESTATE AGENTS**

24. I bought my property through an agent/broker.
   1 2 3 4

45
25. The broker/agent showed me many other pieces of land/houses.

26. It is difficult to buy land or a house without the help of a broker/agent.

27. Real estate agents/brokers ask for more than they should in commissions.

THANK YOU FOR YOUR CO-OPERATION.