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Evaluation of critical factors affecting pricing of real estate among low income people in Nairobi, Kenya

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Evaluation of Critical Factors Affecting Pricing of Real Estate Among Low Income People in Nairobi, Kenya

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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 thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

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June, 2016

Approval

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ABSTRACT

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. However, it is one sector in which the dominant players are the middle or high income earners. The majority of the low income earners do not participate in the development, subsequent pricing, and acquisition or ownership of real estate. This study sought to determine the critical factors that drive real estate pricing and how these factors subsequently influence pricing of real estate among the low-income earners in Kenya. The research applied exploratory research design and a causal approach. The target population for this study was 509 respondents comprising of employees and practitioners of the production group and the public infrastructure group. The study adopted non-probability approach to sampling with purposive sampling as the selected approach. This study used a stratified random sampling method to select 219 respondents. Simple random sampling technique was used to select the sample from each stratum. The study collected primary data from the sampled organisations and/or groups using structured questionnaires. Descriptive statistics were used to analyze relevant data that was collected for an exploratory study. Also inferential statistical methods such as factor analysis, correlation analysis, chi square test and multivariate regression analysis were applied to analyze the data and draw the relevant inferences with regard to the study. The study found that construction cost, financial market dynamics, macroeconomic determinants and structural characteristics were the major determinants of acquisition and ownership of real estate among the low-income earners

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ABBREVIATIONS AND ACRONYMS

'Chamas'	Self Help Groups
CCAPM	Consumption-based Capital Asset Pricing Model
CEO	Chief Executive Officer
DV	Dependent Variable
EIA	Environmental Impact Assessment
EIA	Environment Impact Assessment
GDP	Gross Domestic Product
HD	Head of Department
IV	Independent Variable
KNBS	Kenya National Bureau of Statistics
LS	Lean System
LTV	Loan-To-Value
MBA	Masters of Business Administration
MLM	Middle Level Management
MV	Mediating/Moderating Variable
NACHU	National Cooperative Housing Union Ltd
NEMA	National Environment Management Authority
NGOs	Non-Government Organisations
OECD`	Organisation for Economic Co-operation and Development
REITs	Real Estate Investment Trusts

SBS	Strathmore Business School
SPSS	Statistical Package for Social Sciences
TLM	Top Level Management
UN	United Nations
US	United States of America
USA	United States of America
VAT	Value Added Tax

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Thank you most sincerely to you all!

God Bless!

DEDICATION

To my late father, Dan Hansen Webuye:

You, in conjunction with my mother Jael, inculcated in me the virtues of honesty, persistence, focus, and hard work.

To my dear friends, Mr. & Mrs. Namai:

You both showed me that compassion can move mountains.

To my dear wife: Sophie and children: Sandra, Jeff, and Trevor:

You are an extremely patient and supportive lot. God bless you always!

CHAPTER ONE

INTRODUCTION TO THE STUDY

This chapter presents an introduction to the real estate development and ownership in Kenya. Further in the chapter, the Research Problem, Research Questions and Related Research Objectives are formulated.

Real estate may be defined as property consisting of land or buildings. This also includes the natural resources such as crops, minerals or water that may obtain on the estate. The business of real estate entails buying, selling, or renting land, buildings or housing. Historically, real estate market has been used as a vehicle towards economic development. Performance of real estate is triggered by growth in population as this determines demand (Kioko, 2014).

Pricing of real estate entails taking into consideration various factors such as environment, location of estate, adjacent estate(s), and development costs as well as estimated future costs and expected risk premium. The pricing is achieved by considering a consumption-based asset pricing model where an asset such as housing is explicitly modeled both as an asset and consumption good. In standard practice, Consumption-based Capital Asset Pricing Model (CCAPM) is used to price real estate (Piazzesi, Schneider, & Tuzel, 2007).

Low-income earners in the Kenyan population, as per Kenya Legal Notice No. 115,VAT Pension Act, of 2008 are persons earning less than a gross income of thirty five thousand shillings per month especially in reference to the housing context. Some of the characteristics associated with this group include: low income levels from informal employment, poor living conditions in crowded settlements with no basic infrastructure and informal housing systems (Vuluku & Gachanja, 2014).

This study seeks to review the factors that drive real estate pricing in Kenya and how these affect the low income earners of the Kenyan population. Further the study explores and makes recommendations on how these factors can be rationally harmonized or mitigated against to enable the low income earners become active participants in the development, acquisition and ownership of real estate in Kenya.

1.1 Background of the Study

Globally, shelter which constitutes the largest percentage of real estate is recognized as one of the key basic human needs. The expectation is that lesser expenditure on housing by households accords them healthier diets, quality education for their children and ability to meet other needs in life (Vuluku & Gachanja, 2014).

The universal Declaration of Human Rights of the UN categorically specifies in Article 25 (1) that:

- Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control (UN, Website, 2014).

Against the above article 25(1) and the need for dignity of life for the citizens of any given country, shelter is a key element in the wellbeing of the citizenry. It is in this context that real estate and in particular, housing, plays a key role in the economic and social development of a country such as Kenya.

Real estate is an important asset that pays off housing services, which is a major consumption good. Real estate beyond land, minerals and other natural resources mainly include residential and commercial components. Studies carried out show that the residential real estate component is more important with respect to investing in the sector more than commercial real estate. In pricing real estate, the consumption-based view is applied as residential real estate matters to customers a great deal (Piazzesi et al., 2007).

In a South African study, Ramadou et al (2007) argues that real estate development structures correspond to socio-cultural and economic history of a country and reflect a particular political thought pattern. In essence, physical development study naturally reflects on the historical aspects so as to develop a perspective regarding the problems and challenges of the time.

Psychological studies on motivation and well-being of human beings indicate that satisfaction and self-motivation of people to aspire for higher levels of performance and achievement is driven by certain key elements. Maslow's hierarchy of needs (in its abridged version) stipulates these elements to be physiological, safety, love/belonging, esteem and self-actualization. These needs are hierarchical as studied by Abraham Maslow and may be reflected as a pyramid with the more basic needs at the bottom (Figure 1.1).

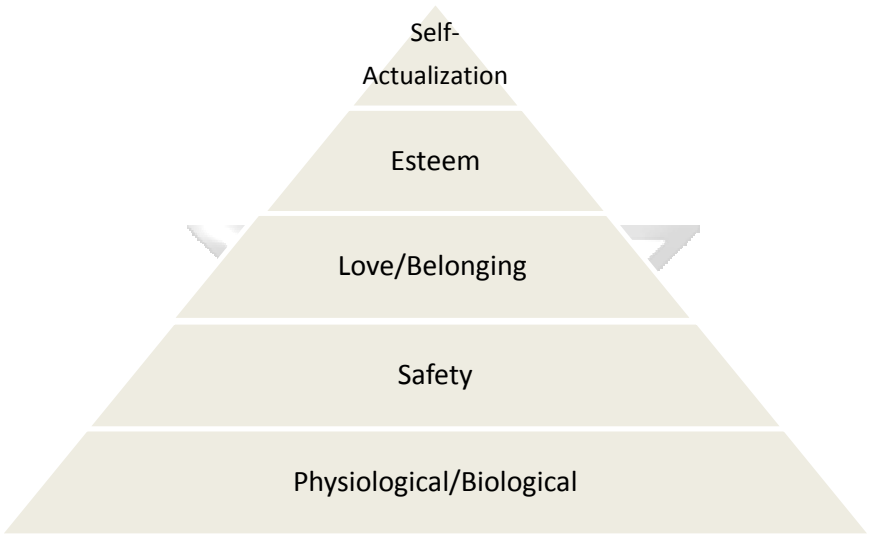

Figure 1.1: Maslow's Hierarchy of Needs

Adapted from Organizational Behaviour (Huczynski & Buchanan, 2013)

The physiological needs are the most critical physical requirements for human survival. These include air, water and food. Secondly, is clothing and shelter to provide protection from elements (Huczynski & Buchanan, 2013).

Real estate investments include the element of housing and other developments that provide shelter to human beings from the weather elements. Against this background, real estate development and ownership is a key factor to the well-being of the low income earners.

Studies show that Kenya is facing an increasing growth of informal settlements in her urban centers. As rapid urbanization takes its toll, so has the development and growth of slums with more than 34% of Kenya's total population living in urban areas and out of this, more than 71% is confined in informal settlements (Mutisya & Yarime, 2011).

Such challenges with population increase present a need for development of real estate and for the low-income earners who populate these slums to participate in real estate and thus improve their lifestyle. This would require the participation of all stakeholders in the industry.

Real estate and in particular the housing sector is one of the dynamic sectors in Kenya with various stakeholders such as the central government, county governments, financial institutions, investment groups, foreign investors, and individual developers. The property market has been responding to demand which has been created by the expanding middle class that has increasing disposable income and able to service their mortgages on houses and other real estate properties (Okal, 2010).

In Kenya, the middle and upper class has been able to invest extensively in real estate through mortgage. However, despite the Kenyan market being sophisticated and robust, the mortgage market only serves 0.05% of the population (Van-Noppen, 2011). The average mortgage repayment period is between ten to fifteen years. With fluctuating interest rates due to inflation and related economic factors, this attracts large total repayment amounts when the principal amount is compounded with the interest due (Kioko, 2014). Consequently, the low-income groups in the country have generally been left out in this development and acquisition of real estate. This is one of the factors that explain the expansion of slum dwellings and other poor habitation environments in many urban centers in Kenya (Gulyani, Talukdar, & Suny, 2006).

This study identifies and evaluates the critical factors affecting real estate pricing in Kenya and how these impact on acquisition and ownership of real estate for the low-income sector of the population.

1.2 Problem Statement

Real estate prices and particularly housing are determined by long-term and short-term factors, with respect to demand and supply. The long-term factors include growth in household disposable income, gradual shifts in demographics, permanent features of the tax system, and the average level of interest rates. Other related long term factors are the availability and cost of land, the cost of construction and investment in the quality of existing housing stock (Tsatsaronis & Zhu, 2013).

Further studies show that, 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 the length of the planning and construction phases and inertia of existing land planning schemes (Tsatsaronis & Zhu, 2013). Other factors are prevailing conditions in the provision of financing for the purchase of real estate, liquidity of the real estate market and transaction cost framework as dictated by say VAT, stamp and registration duties, and inheritance taxes.

According to the Kenyan Ministry of Housing, investment in housing sector, which constitutes a large percentage of real estate, has been minimal and sporadic. This arises from factors such as; lack of an enabling environment for private sector participation in the housing delivery process particularly for middle and low-income groups, low government funding, high cost of finance, lack of serviced land, high cost of building and construction materials, inappropriate building and construction technologies, limited research on low cost building materials and construction technologies, stringent planning regulations and standards and high cost of infrastructure (Van Noppen, 2011).

The development, pricing and subsequent investment in and ownership of real estate in Kenya invariably gets skewed in favour of the rich upper class; followed by the upper middle class and at the lowest level are the low-income earners, who are almost non-participants in the sector except mainly as a source of cheap labour. The policies in place from economic, financial and legal points of view, inordinately favour this status quo.

There are fundamental social-economic problems that arise from this skewed state of the industry/market as aforementioned. Consequently, there is need to develop new strategies with respect to pricing to enable the low-income earners who constitute the largest percentage of the Kenyan population to also actively participate in development and ownership of real estate.

Real estate prices in Kenya has doubled, even tripled in the past few years (Majtenyi, 2010) and the government wishes to know the cause. However, little is not known as to what factors contribute to the upsurge in prices of real estate and how these prices affect the low income earners. (Muthee, 2012) conducted a study on the relationship between economic growth and real estate prices in Kenya and found that there is a relationship between the variables revealing that a quarterly change in housing prices yields a quarterly change in GDP. Wanjohi (2012) investigated the application of heterogeneous asset pricing model in the

residential real estate market in Kenya. The study found that, heterogeneous asset pricing model is applicable in pricing of residential real estate assets in Kenya thus confirming the hypothesis of the study. Mwololo (2014) also conducted a study on the effect of macroeconomic variables on prices of residential real estate properties in Kenya. The study established that unemployment rate, real GDP and inflation had a significant positive effect on residential housing prices in Kenya.

Though the studies above have discussed various factors that affect the prices of real estate in Kenya, no study has been done to establish how the effect of these factors on real estate prices affects the low income people. Therefore, the main objective of this research was to explore and determine the key factors that affect real estate pricing among low income people.

1.3 Research Objectives

1.3.1 General Objective

To establish the critical factors affecting real estate pricing among low income people in Nairobi, Kenya.

1.3.2 Specific Objectives

The specific objectives of the study are as follows:-

i. To establish the effect of shifting population demography on pricing of real estate among low income people.
ii. To determine how construction cost affects pricing of real estate among low income people.
iii. To explore how structural characteristics affect the pricing of real estate for low income people.
iv. To establish the effect of financial market dynamics in pricing of real estate among low income people.
v. To determine how macroeconomic determinants affect the pricing of real estate among low income people.
vi. To explore how government policies/subsidies affect the pricing of real estate among low income people.

1.4 Research Questions

This study seeks to answer the following research questions:-

i. How does shifting population demography affect the pricing of real estate among low income people?
ii. To what extent does construction cost affect the pricing of real estate among low income people?
iii. What structural characteristics affect the pricing of real estate among low income people?
iv. In which ways do financial market dynamics affect the pricing of real estate among low income people?
v. To what extent do macroeconomic determinants affect the pricing of real estate among low income people?
vi. How do government policies/subsidies affect the pricing of real estate among low income people?

1.5 Significance of the Study

Real estate, and in particular housing, is a fundamental aspect for economic growth of a country. Shelter is a basic human need. Thus it behooves responsible governments the world over and their relevant agencies to either provide housing or create an enabling environment in fiscal and legal terms for other stakeholders to develop real estate for both rental and selling purposes.

The pricing of real estate and related pricing dynamics that drive the process are key determinants in both the demand and supply of real estate. In Kenya, demand for housing far outstrips the supply. Available data shows that 22% of Kenyans live in cities, and the urban population is growing at a rate of 4.2% per annum. Nairobi, the capital city, requires at least 120,000 new housing units annually to meet the demand yet only 35,000 homes are built in a year. Thus the deficit in housing is always growing and averages at 85,000 units less per annum (Kioko, 2014).

Consequently, with the lopsided ratios of demand to supply, prices for houses have increased sharply by 100% and above since 2013. This has continued to push the low-income earners out of formal housing market and into slums (Van Noppen, 2011).

This scenario replicates itself in other urban centres in Kenya and by extension the rural areas. A review of the pricing dynamics with a view to rationalize and possibly lower the prices of real estate in the market would be significant in enabling participation of more citizens in the real estate development and ownership.

Based on the study's findings, all stakeholders will be able to address the challenges and dynamics related to real estate pricing in a better manner and this will have a positive input on availability of fairly priced real estate, especially housing, and thus become attractive to low-income earners enabling them to participate in the sector and develop and own real estate. Ultimately this may have the impact of reducing the proliferation of slums in the country.

1.6 Scope of the Study

The study was be of an exploratory nature and was limited to enquiries made to managers of mortgage financial institutions, construction consultants, contractors, government agencies and low-income earners by use of appropriate questionnaires. Purposive sampling was used to address the respective target groups to be sampled. The focus for the study was mainly in Nairobi as the number of financial institutions, consultants, contractors, key government agencies, and low-income earners who live in the poor settlements and slums is higher and would be representative for the rest of the country.

In the study the relationship between the factors that drive real estate pricing and the development and ownership of the same were identified and further interrogated to establish whether they are correlated or otherwise. Subsequently, suggestions were put forward on how best to enable low-income earners participate in the development and ownership of real estate taking the identified key factors into account.

However, the in-depth sociological and environmental issues that also influence real estate development and ownership were not be addressed in full and these aspects may be addressed in further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, relevant literature is reviewed. The literature encompasses three broad areas namely; a brief history of real estate development and ownership in Kenya, the fundamentals of real estate development and evaluation of systems thinking in real estate development, real estate pricing fundamentals and dynamics as applied locally and on the global scene.

The existing gaps in real estate pricing and ownership and the roles and participation in this sector by low-income households/groups including the associated factors are also discussed. A conceptual framework is further developed at this stage.

2.2 Fundamentals of Real Estate Development

Estate refers to "all that a person owns" and 'real estate' means all realty owned as part of an individual's estate. Real estate development process involves three major groups - a consumer group, a production group and a public infrastructure group. The groups are interrelated and the actions of one group affect the other two. In essence, each group has to cooperate and fully understand the short-term and long-term objectives, values and major limitations controlling the other two for it to benefit. A common shared major limitation amongst the groups is that of each group being a cash cycle enterprise that must remain solvent for survival and must create a surplus over time to maintain credibility with others (Geltner, M., Miller, G., Clayton, & Eichholtz, 2007).

On a continual basis, the cash cycle enterprises (The Consumer, Production & Infrastructure Groups) have to make assumptions about future social norms, technologies and the general direction of complex changes in personal, natural and political conditions. Subsequently, there is a margin of error called risk that arises from the gap between assumptions and realizations in the real estate sector.

The producer group in the triumvirate is usually the lead group in the initiation of projects and therefore bears the greatest risk. To hedge against these risks, thorough research has to be continually done so that the product developed meets, as accurately as possible, the expectations and needs of the purchaser of the real estate or the tenant. The product should also fit the values of the collective consumers and the ethics of land use in the given society.

Geltner et al (2007) further review the space-time concept to expand it into that of space market and asset markets with regard to real estate. The space market is the market for the usage of real property. This refers to the rental market which is defined by the demand side (individuals, households, and firms) seeking space for either consumption or production purposes.

On the other hand, there are the real estate owners who rent out space to tenants. Supply and demand determines the rental price to be paid and it gives an indication of the current value of the built space and the current balance of supply and demand for the space. Growth in demand with available space remaining constant leads to rise in rents payable. The converse also holds true (Geltner, M. et al., 2007).

Based on the economic law of supply and demand and the resources available, the relationship between supply (Quantity of space available) and rent payable is as in Figure 2 below:

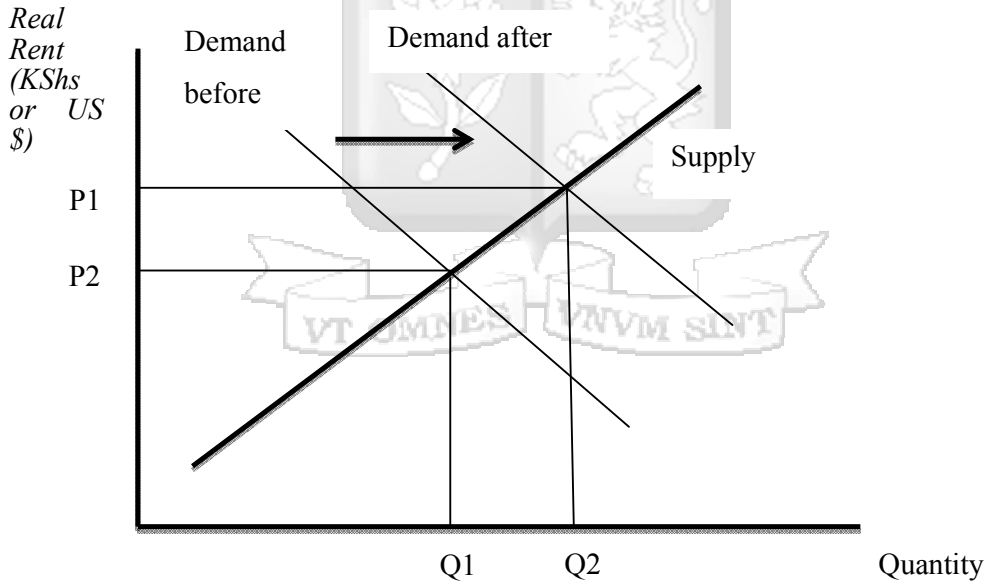

Figure 2: *Supply & Demand Relationship Determined by Price & Space Available*

Adapted from Commercial Real Estate Analysis & Investments (Geltner, M., Miller, G., Clayton, & Eichholtz, 2007)

2.3 Real Estate Development Dynamics and Trends

Real estate, and particularly housing, is the largest asset class in the world. As an example, Okal (2010) observed that the value of housing in the United States of America alone was $16 trillion. Real estate and housing development has evolved quite significantly over the years; in the process experiencing rapid growth throughout the world in its various forms. Many emerging countries have witnessed significant growth in commercial real estate and housing as these become stable sectors of their economies. After this sector has become commercially stable in the emerging countries, there has followed development of real estate financial markets. The growth of Real Estate Investment Trusts, REITs, and markets in many countries within the past decade has helped attract global capital that has facilitated additional investments in local real estate developments. Significantly, this period of time may have witnessed a higher degree of integration of real estate with the broader financial markets due in large part to the securitization of mortgages. Yet the general real estate market was impacted in many parts of the world with rising price and subsequent price collapses (Patterson, 2013).

Far more people rent than own homes in developed cities in the world, especially among households who opt for apartments (Opoku & Abdul-Muhmin, 2009). The provision of adequate housing is a very integral part of the needs of every society and has great value for individuals, families, communities, and society at large (Opoku & Abdul-Muhmin, 2009).

About 90% of the residents in Berlin are renters, 85% in Geneva, about three-quarters of the population are renters in Vienna and Amsterdam, and in Paris, more than half the residents do not own their own homes (Benjamin, 2007). In Saudi Arabia, about 67% of low-income households living in apartments prefer renting to buying their own house (Opoku & Abdul-Muhmin, 2009).

The housing crisis, especially in the developing world, is deteriorating by the day resulting in a situation whereby the efforts towards achieving adequate housing at cheaper rates is becoming a mirage in spite of the ambitious United Nations Millennium Development Goal 7 Target 11 (Tibaijuka, 2008). However, despite vast improvements in housing conditions, the situation leaves a lot to be desired in most parts of the world. Housing in developing countries as stated by Orbit (UN-Habitat, 2006), is seen as the world's most unsolvable problem that is reflected in slums where the majority of the urban poor live. UN-DESA

(2009) indicates that although positive achievements have been recorded in eradicating slums around the world, the housing crisis in developing countries might slow the progress and the positive trend could be reversed. Housing problems are far from being solved. These problems, according to Bourne (cited by UN-Habitat, 2008), vary from country to country and also over time, and the problems depend largely on a country's social, economic and political conditions prevailing at a given time, as well as people's attitudes towards living standards and their expectations for housing improvements. Apart from these, UN-Habitat (2008) states that policy objectives cannot be overlooked as most of the time government policies do not always match these objectives. Housing problems arise from mis-matches between policy instruments and objectives, as well as from conflicts between various housing and non-housing objectives including from conflicts between limited and competing resources and objectives.

UN-Habitat (2008) states that only a few areas affect human beings as much as housing does and that the importance of housing cannot be overemphasized. More than one billion of the world's total urban populations according to UN-Habitat (2007) live in inadequate housing, mostly in slums and squatter settlements of the developing world. According to Van (2009), most of the developing countries have to contend with housing backlogs and housing demand brought about due to population growth.

Similarly, housing provision challenges in Africa and other developing countries, according to Ibem (2011), are on the increase due to the fact that the rate of production has not kept pace with urban population growth. Close to 3 billion people, or about 40% of the world's population by 2030, will need improved housing and basic infrastructure services. This translates into a need for a production rate of completing 96,150 housing units per day or 4000 per hour (UN-Habitat cited by UN21 Habitat, 2007). This challenge is daunting and all stakeholders must come together in order to find ways by which the challenge could be ameliorated.

South Africa has been very active in addressing significant issues in housing, including a severe shortage of housing stock which led to high rent rates and the low quality of living conditions. A national housing programme was introduced in 2000, which extended subsidies to low income households. This capital subsidy was sufficient for securing a plot, the installation of water and sanitation services and the construction of a basic house. This initiative resulted in the building of 1.5 million new housing units between 2000 and mid-

2003, with a further 300,000 under construction at that point. More than 2.2 million houses were delivered up to 2009; this figure has since risen to 2.8 million units in 2010. Despite the success of this ambitious programme, the country continues to face a substantial housing deficit, with the backlog in provision estimated at 2.3 million South African households in mid-2003 while in early 2010, the backlog was 2.1 million (UN-DESA & UN-Habitat, 2013; UN-Habitat, 2008; Zuma, 2010).

At the turn of the millennium, there were about one billion people living in inadequate housing conditions in developing countries. The need for scaling up housing supply has become an urgent focus of policy debate, with the need to expand the role of private markets. According to the UN-HABITAT, the incidence of renting in some parts of West Africa is also high. For example, 80% of households in Abidjan, Côte d'Ivoire, were tenants in the 1980s. In Port Harcourt, Nigeria, 88 percent of households were renting accommodation in 1984. In South Africa, almost 90 percent of migrants to Johannesburg either rented or shared accommodation upon arrival in the city (UN-Habitat, 2008).

2.4 Systems Thinking In Real Estate Development

Systems' thinking in real estate development uses the concept of **'Lean Systems' (LS)**. This approach is aimed at improving efficiency of real estate and housing development, management and maintenance. Jackson et al (2008) describe lean systems as being based upon the systems principle that operations or organizations should be viewed as 'wholes' serving a purpose. The system is seen in terms of its customer- "what matters is what matters to the customer". Once the customer's purpose has been established, attention can then be given to how the parts or tasks must be fitted together in order to achieve that purpose.

Lean systems approach may be applied to define a real estate customer's needs (in the case of this study the low-income earner) with respect to real estate pricing and subsequent ownership. Once these needs have been clearly identified, then the constituent parts and inputs required to meet the needs with respect to pricing of the real estate products and resultant ownership can be pieced together (Jackson, Johnston, & Seddon, 2008).

2.5 Key Stakeholders in Real Estate Development

Real estate development involves three major groups- a consumer group, a production group and a public infrastructure group. The major limitation shared by all these groups is that each

has a cash cycle enterprise which must remain solvent to survive. The best risk management device for the producer group is through research so that the development product fits as closely as possible the needs of the tenant or purchaser, the values of the politically active collective consumers and the land use or the ethic of the society (Assaf, Bubshaitr & Al-Muwasheer, 2010).

In the Kenyan context, the production group would include the developers, financiers, planners/consultants, and the contractors. The consumers would be the potential buyers and tenants of the final real estate product whereas the public infrastructure group would be the National Government through the relevant ministries such as Roads and Infrastructure, Lands and Housing and National Environment Management Authority (NEMA); as well as the County Governments.

All the three groups have to operate in synchrony for the real estate industry and market to achieve value and lower costs to enable affordability and ownership. This would also result in favourable pricing leading to low-income groups to join the sector in real estate ownership more effectively.

2.6 Historical Overview of Real Estate in Kenya

Real estate development sector in Kenya is closely tied to the history of the country which as a nation-state was created following the European colonization in Africa. The colonization in Africa lasted from mid-1800s to the 1960s. In the 1960s most countries started to get their independence from the colonizers with Ghana as one of the first such countries (Obaga, B., 2009).

Kenya is experiencing rapid urban growth in a context of limited economic growth and restricted land supply. Rental housing is expanding as few people can afford their own homes. Rental accommodation in Kenyan towns has usually been associated with low-income households but it has also become the main form of housing for middle-income households and new urban residents of all income levels. In the eight years from 1999 to 2007, the numbers of housing cooperative societies increased from 108 to 227 (Republic of Kenya, 2010). There are also land-buying cooperative societies (LBCS) and land-buying companies which also contribute to housing production through the sale of plots at affordable prices.

The housing policy set out in Sessional Paper No. 5 set a national production target of 7,600 units per year but this has never been realized. According to the 1976-1982 urban housing survey, average annual housing production was only 6,400 units per year with the public sector supplying 75 per cent and the formal private sector 25 per cent (Republic of Kenya, 2010). As the urban population grew, formal housing supplied fewer and fewer houses relative to demand (Republic of Kenya, 2011). By 2008, demand had risen to 65,800 units yet housing production in the formal public sector further declined during the second half of the 1980s and the first half of the 1990s. In the nine years from 1993-2010, only 5,568 units were built (Republic of Kenya, 2011).

The construction sector in Kenya recorded a growth of 8.3 per cent in 2008 compared to 6.9 per cent in 2007 (Republic of Kenya, 2009). The robust growth was supported largely by increased capital investment in roads and housing. Increase in construction activities was reflected in cement consumption which grew by 7.0 per cent from 2,061.4 thousand tones in 2007 to 2,205.8 thousand tones in 2008 (Republic of Kenya, 2009). Muchiri (2006), in a study, as cited by Okal (2010) indicates that land in Nairobi, Kenya had an estimated value of Kenya Shillings 140 billion as at the year 2003 (Okal, 2010).

In Kenya, Property Kenya, a real estate agency operates a heavy traffic of real estate listing service online with more than 31,290 registered members and 30,000 unique visitors monthly. This indicates the immenseness of wealth in real estate (Property Kenya, 2010).

According to a report by the National Housing Corporation (NHC), the Vision 2030 estimates that the country requires 200,000 new units of housing but only 35,000 units have been produced to date. That means we have a deficit of 165,000 housing units. Similarly, a report from the Kenya National Bureau of Statistics (KNBS) indicates that real estate investment has contributed a lot to the growth of Kenya's Gross Domestic Product. For instance data from Kenya National Bureau of Statistics report (2012) shows that, in 2008, real estate contributed 107, 323, 000 shillings to the country's GDP. In the subsequent year, 2009, the value of GDP attributable to real estate reduced slightly to 116,657,000 Kenyan Shillings. In addition the value of GDP further rose in 2010 to 123,173,000 shillings and consequently the contribution to GDP from real estate rose further in 2011 to 134, 746, 000 Kenyan shillings. Real estate and renting business services play a crucial role in the Kenyan economy (Statistical Abstract, 2011).

The development and ownership of real estate in Kenya has been driven and affected by a wide range of factors that have defined its evolution over time, both at the pre- and post-independence periods. These factors have had both positive growth-accelerating effects as well as negative retrogressive effects over the country's history to date (Obaga, 2009). Some of these factors, include, but are not limited to the people and their cultural practices; politics of the country (both pre and post-independence); land use and environmental control (control of land use, policies, and spatial planning); tenure and legal framework (titles, mortgages, easements, secure legal rights); economic and financial services (credit availability and accessibility); sustainable development (environment, society and economy); fiscal policies (expansionary and deflationary).

In the Kenyan case, real estate development and ownership has largely been a class affair, with the low-income groups being adversely disadvantaged (Gulyani et al., 2006). Kenya has been faced by the challenge of shanty settlements, especially in the cities and towns. This is largely attributed to colonial displacement of the indigenous population. Besides this, due to rural-urban migrations, legal land acquisition for development of standard housing has been a great challenge with negative implications that led to the proliferation of slum dwellings (Otiso & Owusu, 2008). Otiso and Owusu (2008) further observe real estate development, including provision of housing, basic services and infrastructure suffered in Kenya because of continued reliance on colonial planning regulations, by-laws, architectural styles and housing standards.

Despite the challenges, however, investment in and development of real estate has seen phenomenal growth in Kenya over the years. This has been greatly influenced by the awareness among the citizenry and the government and its agencies that real estate market is a key contributor to the socio-economic development of a nation. This market creates employment, through construction of houses, office blocks including other developments and related infrastructure. The sector is also a major contributor to the Gross Domestic Product (GDP) of Kenya. Makena (2012) citing Case et al (2013) notes that for many households, self-owned houses offer an alternative place to live as well as representing the most important chunk of assets in a household's portfolio (Makena, 2012).

2.7 Theory of Pricing

Theory of price asserts that the market price reflects interaction between two opposing considerations and contends that the price for any specific good/service is the relationship between the forces of supply and demand. The theory of price says that the point at which the benefit gained from those who demand the entity meets the seller's marginal costs is the most optimal market price for the good/service. On one side are demand considerations based on marginal utility, while on the other side are supply considerations based on marginal cost. An equilibrium price is supposed to be at once equal to marginal utility from the buyer's side and marginal cost from the seller's side (Jimmy, 2009).

In most empirical studies, Price Model is used to identify and measure the effect of environmental valuables and building characteristics on property values. 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. Seelig et al (2009) alludes that although the price method is, undoubtedly, the most commonly used research tool for investigating the negative and positive effects of neighborhood, amenities and building characteristics on property values, some underlying assumptions of this method may, nevertheless, be questioned. According to Roscigno, Karafin and Tester (2009) for instance, the hedonic price approach assumes the existence of direct links between environmental factors and building characteristics, on the one hand, and property values, on the other. However, these factors likely correlate indirectly, through the investment decisions of property owners.

2.8 Real Estate Pricing Fundamentals

According to Edward (2010), 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 to offer the seller less for the property than the asking price. Every aspect of a real estate purchase is negotiable. Real estate pricing deals with the valuation of real estate and all the standard methods of determining the price of fixed assets apply.

Antonio (2006) stated that real estate is multifaceted. It is local and it is national. Prices may be high in summer and lower in winter. What sellers ask for may be higher in winter and lower in summer. It can be perception. It can also be supply versus demand. Real estate is a

business, an emotion, a science and it is random. There are usually hundreds of forces at work, many unseen, culminating in a selling price for a house or a piece of land. Brophy (2010) pointed out that real estate sellers try and sell for as much as they can and buyers try to buy for as little as they can. Agreements may work out from there and the final selling price is agreed upon.

Real estate market is one that is characterized by almost predictable cycles of booms and busts (Smith, 2010). The former are the periods when the prices in market soar and almost inevitably, they are followed by other periods when the prices plummet. There are actually 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 reliably tell when they are seeing a bust (when prices are very low), purchase property at that point and then sell it during the subsequent and virtually inevitable boom, making a big profit (Smith, 2010).

In their study, Hinkelman and Swidler (2008) wonder if it is possible to reach a high correlation among present real estate prices and a future price portfolio by establishing the base limit and drawing up a long-term agreement. The research shows that there is no simple adjustment for future real estate prices, and the base limit may be subject for further risk. Namely, different properties may be evaluated with the relevant future indexes. The specifics may lie in differences with respect to the year, real estate property size, style or asset amortization.

Real estate prices in Kenya have doubled, even tripled in the past few years (Majtenyi, 2010). Demand for housing units continues to outstrip the supply (Masika, 2010). Real estate property market is booming in Kenya especially because of the growth in the mortgage financing in the country (Masika, 2010). 60% of the pension fund is going towards the property market (Mwithiga, 2010) and they are using it as mortgage security (Okumu, 2010). Real estate property negotiations and prices in Kenya are widely determined by the 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 (Masika, 2010).

Real estate investments and prices are good measures for reflecting expected real estate demand, and serve as good predictors of economic growth (Knight Frank, 2011). A survey conducted by Hass Consultants in association with CFC Stanbic bank in the year 2010

revealed that the Kenyan real estate sector has been vibrant for the past decade between the years 2000 to 2010. For instance the report also indicated that capital gains from Kenyan properties far outstrip gains from US and UK properties. This has eventually made the Kenya real estate market to be the winner in the international property investment amidst the indebtedness in the Western Countries (Mwithiga, 2010).

Real estate and renting business services play a crucial role in the Kenyan economy (Statistical Abstract, 2011). For instance the investment grew at 3.5% in 2007 and rose slightly to 3.7% in 2008. The growth declined sharply to 3.0% in 2009 due to reduction in capital investment and the poor performance of the economy as a result of the post-election violence that led to destruction of property following the disputed 2007 General Elections. The growth picked up in the subsequent years at 3.2% and 3.6% in 2010 and 2011 respectively as investment climate became conducive. By the end of the third quarter of 2012 the investment was growing at 3.8% depicting an increasing trend. There has been a great appreciation of property prices and volatility across the different property markets in Kenya since the year 2006.

According to Hass property consultants, in the first property index in Kenya, the prices for high end residential properties has doubled between 2005 and 2009 (Hass Property Index, 2009). The current rental yields that are the return on capital tied up in property is however much lower than mortgage interest. The Hass consultants' property index data for the first quarter in 2011 indicated that rental yields are down to 5.62 per cent per year from a high of 7.3 percent per year in 2007. The Hass survey further revealed that property prices have risen to 55 per cent since the 2007 while rental yields have appreciated with only 18 per cent. The main concern is that real estate contribution to the economy of Kenya (as measured in relation to the economic growth) has faced a declining trend for the past years. For instance in 2008, it contributed to 5.1% of total GDP, and in 2009 it reduced to 4.9% of GDP. Subsequently it slightly fell to 4.8% in 2010 and further declined to 4.5% in 2011 (Hass Property Index, 2009).

2.9 Critical Factors Driving Real Estate Pricing and subsequently acquisition and ownership among the Low-Income

Prices in most areas are influenced by demand and supply forces as research has shown (Choudhury & Sanampudi, 2008). But for some reason, the real estate market prices in other

different areas seem to be dictated by what comes across as quite a different set of forces. Prices are limited by various factors such as the incomes of potential buyers, the cost and the ability to construct new property to increase supply and demand for rental units. The ability to make payments, borrow money and the cost of borrowing money are major influences limiting how far prices can rise before hitting resistance due to prices hitting levels where potential borrowers are unable to qualify (Earl, 2006).

2.9.1 Shifting Population Demography

Demographics are the data that describes the composition of a population, such as age, race, gender, income, migration patterns and population growth. These statistics are an often overlooked but significant factor that affects how real estate is priced and what types of properties are in demand. The forecast of the rapid fall in the rate of house price inflation in the U.S. between1987 and 2007 by Singh (2009) and the coincidental decrease in real house prices commencing from 1987 funneled the interests of researchers into demographics and provoked the intense debate on the influence of demographic changes on house price fluctuations.

A landmark housing demography study which examined the links between demography and real estate was undertaken by Singh (2009) where the findings concluded an age dependent demand variable had a significant influence on the level of housing prices in the US. The study focused on demographic variables and forecast a 47% decline in house prices. In the housing demography literature there have been studies undertaken into individual countries.

Applying the original Singh (2009) framework to Austria, Lee et al (2013) argued that the number of adults plus net migration is collectively a better demographic indicator for housing pricing studies than simply examining the actual number of births that occurred 20 to 30 years earlier. The same study also concluded the variables for income; finance costs and the jobless rate were all significant in the analysis of housing prices. With reference to Canada, the same methodology as the original Mankiw and Weil study was used but no significant relationships were identified (Engelhardt & Poterba, 2008). In a Germany study, Maennig et al (2007) analyzed the relationship between housing prices and demography in German cities; the model used a dummy variable to reflect cities which were growing or shrinking.

According to Glaeser and Gyourko (2013), several studies of US regional housing markets have found that the low supply elasticity of housing units is an important factor behind the

recent larger price increases in some urban markets. In particular, house prices are much higher than construction costs throughout parts of the Northeast and the West coast. Demographic developments, over and above their influence through real disposable incomes can also raise housing demand, thereby increasing price levels (Cerny et al, 2005). In particular, high rates of net migration, declines in the average size of households and increases in population shares of cohorts of individuals in their thirties will boost housing demand by increasing the share of the population of household formation.

There is a high and increasing demand for housing in the metropolitan areas, but the supply of apartments is growing very slowly (Seboru, 2006). However, it could be argued that the supply of new homes could have a stronger effect on house prices. To use an analogy with labour market search theory, existing homes for sale are analogous to workers engaging in on the job search while new homes for sale are analogous to the unemployed.

With hindsight, the original forecast of Mankiw and Singh (2009) seems inconsistent with the actual path of house prices in the U.S. which shows an upward trend during the period from the late 1990s to 2008. The essential reason for the weak predictive power originates from their overemphasis on demographics in deriving the coefficient of age dummy variable in the cross-section analysis. Nevertheless, as Poterba (2011) clarifies, house prices are affected by demographic factors, representatively by the number of households. However, he argues, the timing and the magnitude of the effect are hard to predict as these factors are part of a broader set of economic forces influencing house prices. This conclusion is supported by several empirical studies showing the positive impact of the demographic variable on house prices (Agnello & Schuknecht, 2011).

2.9.2 Construction Cost

Heavy land-use regulations in some US metropolitan areas have been associated with considerably lower levels of new housing construction due to high costs of construction which have restricted housing supply and thus increased house prices in the regulated municipalities as well as in neighboring towns. Swedish housing construction costs have risen more than the rate of inflation during the last decade. Increasing construction costs affect households' welfare in terms of housing affordability, weaken the relationship between developers and contractors, and destabilize the housing markets as well as the whole economy. Metropolitan regions of the country experienced higher construction cost increases

while small regions showed less costs increases during economic booms. The effect of the construction costs escalation was not evenly felt in all regions and there was also an imbalance of housing stocks in various regions (Atterhög & Lind, 2013). The supply of new residential apartments stagnated at the same time as the construction costs were high particularly in the metropolitan regions where the housing demands were stronger (Basheka, 2008).

While there is no notable disagreement about the consequences of high construction costs, much of the difference of opinions arises from the question of the real causes of higher construction costs (Saukkoriipi & Josephson, 2005). European Commission report (2005) emphasizes the consequences of this high construction cost on certain cities of Sweden by referring to the latest housing market survey of the Swedish Department of Housing that states that Sweden's commercial centers suffer from an acute shortage of housing, and lack of student accommodation at university sites. One reason given for the low level of construction in Sweden was that the present production cost makes it almost impossible to build rental housing and make a profit and the few that are constructed have high rent rates. Interviews with municipalities (Boverket, 2005) indicate that many of them (over 80%) believe that higher production cost is one of the major obstacles in housing construction.

Blackley and Follain's (2008) found out that housing prices were driven primarily by the cost of land and construction inputs and that causes of construction cost escalations can be numerous and any effort to ascertain them in order to explain regional disparities requires that all the major construction cost components affected by the increase must first be recognized. There is a large volume of literature dealing with the problems of high construction cost but only few studies tackle this issue within the context of changing economic conditions and the governance structure of construction firms. The type of relationship between developers and contractors, the firm structure such as developer-contractor or independent developer/contractor, and the level of foreign supplier competition found in these various regions might, among others, explain the disparity in construction costs increase observed in these regions.

In addition, limited land supply, detailed development assessment processes, planning strategies in the financial market and shifting demography have pushed up the total cost (Gurran, Ruming, Randolph & Quintal, 2008). In order to cover the high cost of refurbishment or new construction to comply with tax and other statutory requirements (such

as rising skilled labour and material costs, interest costs, fire safety and other charges), investors push supply towards the higher-end market which provides a better return for their investment (Susilawati, Armitage & Skitmore, 2005). Many of the current affordable housing owners or new investors convert old affordable housing stock to modern, expensive housing, such as higher density up-market apartment blocks in inner-city areas. Investors in rental housing seek both rental return and capital gain from their investments.

The loss of existing affordable housing stock is exacerbated by the increase of market price where the rental income, as lower than market rent, cannot cover the maintenance cost and upgrading cost for older rental housing (Rengert, 2002). Moreover, alternative forms of low-cost housing, including boarding houses and caravan parks, have largely disappeared (Seelig, Burke & Morris, 2005).

Large cities are often associated with higher living expenses for workers and thus commensurate with higher wages. Shortage of easily constructible land, constrained construction-site accessibility that could increase material delivery costs as well as demand for on-site specific construction equipment and techniques due to close proximity of other buildings may also raise the level of building cost in many major cities. Thus, it is reasonable to assume that, in normal circumstances, large cities will experience higher construction costs as compared to small or medium sized cities which in turn results to higher rent rates.

2.9.3 Structural Characteristics

The supply of informal rental housing built without following planning procedures or local authority by-laws is growing much faster than formal housing. House-building in the slums and squatter areas by either landlords or squatter families take place continuously. In the informal sector, house construction is done without regard to planning rules or construction standards. Growth appears to be fastest for site and service housing where construction of rental units frequently exceeds what is stipulated in purchase agreements. For example, in Mathare North and Kayole in Nairobi which are site and service schemes, construction of additional rooms have greatly exceeded the maximum two storeys provided for in the purchase agreements. Some houses are now six, seven, and eight and even ten storeys high. The urban housing survey of 1983, classified 41.5 per cent of all dwelling housing units in Kenya as semi-permanent or temporary structures (Kiamba, 2007).

Tenancy in these houses is as informal as the structures. Information on private rental housing is not easily available and information on the formal sector is also scanty as most developers do not submit their plans for approval. Even in affluent Karen and Lang'ata areas, in Nairobi, site plan approval and building plan approval were sought by only 41.7 per cent (Karen) and 50 per cent (Lang'ata) of property owners (Mwangi, 2010). Old apartment buildings in general tend to come with lower monthly rents.

Zietz et al (2008) have demonstrated, in their study and with its results, that varying characteristics of real estate properties account for their varying sales prices. Previous studies on the effects of the characteristics of the sales price with respect to the square metre surface or age of a real estate property have shown quite varying results. However, their study has provided interesting results, which specifically imply that some variations may be accounted for by varying real estate prices. Particularly interesting is the fact that the characteristics of high-priced apartments are presented to the buyers in a way that is completely different from presentations of the characteristics of low-priced apartments. The findings indicate that the greatest variations pertain to the square meter surface (with high-priced apartments, it is 2.5 times larger than with low-priced ones), size of land lot, number of bathrooms, flooring types. Other things have an approximately constant effect on price (garage, distance from the city). Although deviations in real estate characteristics were also rated differently with respect to areas, it is good to add the results mentioned above to the research and the explanation of real estate prices.

Real estate in Philippines according to Cahill (2010) varies in prices due to many factors. Among these factors, there are three that have the greatest influence. The first is location. The location of real estate in Philippines has one of the most, if not the most, effect on the real estate prices. Usually, the closer the land is to commercial centers or recognized vocational spots, the more expensive the land becomes. The second one is accessibility. Roads and other infrastructure cost a great deal of money to build and maintain which is why lands supported with paved streets cost more than lands surrounded with dirt roads. The third is land developer. Real estate prices are also affected by the companies that own them. The more popular the real estate company is, the more expensive the lands are. 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.

2.9.4 Financial market dynamics

Interest rates play an integral part in real estate as most purchases of real estate property tend to be acquired on a mortgage basis. In a declining interest rate environment, the cost of servicing a loan becomes smaller. This typically allows households to take a bigger mortgage within their current income budgetary constraints. This ultimately boosts the demand for and price of residential real estate. Using vector auto-regression methodology, Tsatsaronis and Zhu (2013) found that interest rates especially short term interest rates explain almost 10.8 per cent of the variation in house prices. It is postulated from their model that a negative one percentage point change in the real short-term interest rate leads to an increase of 1.2 per cent in house prices over two years. They also found that countries which use predominantly floating-mortgage rates demonstrate higher impact of short-term rates on house prices.

Greenspan (2010) maintains that long-term interest rates were the main driver of the housing boom since a considerable proportion of mortgages in the U.S. are linked to 30-year fixed interest rates. Since long-term rates, he argues, were subdued for a prolonged period (presumably due to the global saving glut), he seems to conclude that the tremendous stockpiles of savings in the Asian emerging markets were the root cause of the housing boom. He also points out the limitation of implementing the Taylor rule in investigating the issue since no input in the equation is related to housing demand and hence a lower level of policy rate than the level calculated by the rule is not necessarily followed by house price inflation.

Greenspan (2010) ascribed the crisis to an extraordinarily low level of risk aversion admits that the global house price bubble was a consequence of lower interest rates. Even with a cursory look at the existing empirical results summarized in Girouard et al (2006) and Iossifov et al (2008), wide variation in the magnitude of the coefficient of interest rates can be noticed easily. For example, the estimated interest rate elasticity of house prices ranges from -7.1 to -0.02. The former figure comes from Annett (2005) for eight Euro-area countries during the period from 1970 to 2003 and the latter one is estimated in OECD (2013) about Netherlands during the period 1970 through 2002.

Smith (2010) identifies three channels of the interest rate impact as real interest rate effect, monthly payment effect, and the effect of expectations about future interest rates. Generally

speaking, the value of a house far exceeds the annual amount of savings of home buyers and for that reason the demand for housing depends considerably on accessibility to credit or liquidity. For example, a large down-payment is necessary for buying a new house in the U.S. and the liquidity available for buyers influences the decision whether to purchase a house (Stein, 1995). No doubt the accessibility varies among individuals depending on the level of income and creditworthiness. It also varies across time as the regulations governing the financial sector evolve. Disregarding individual differences, the total demand for housing depends to a certain extent on credit availability varying with the developments of housing finance.

After the 1990s, the second-round effects of the financial liberalization on house prices have attracted considerable attention in housing research. Makena (2012) argue that the influences of a shock to the economy can be amplified and also propagated through the initial changes in the value of collateral such as land. Subsequently the amplification process causes changes in the borrowing capacity of economic agents. In the same vein, the amplification mechanism can be applied to the housing market. If a positive shock hits the economy such that the demand for housing expands and consequently house prices appreciate, that leads to increases in the net worth of the collateral. As this makes equity withdrawal easier and renders the regulation on LTV (Loan-To-Value) looser, the capacity for buying houses becomes greater. Subsequently, the newly created demand for housing, caused by an increase in credit accessibility following the initial shock, accelerates the speed of house price inflation.

To verify whether the mechanism operates in the housing market, Lamont and Stein (2009) classified the 44 cities into the two groups of the high and low-leverage city and regress the house prices on income and the one-period lagged dependent variable over the period 1985-1994. They find that both the sensitivity of house prices to income shock and the resulting cumulative changes in house prices are higher in the case of the high-leverage city group than in the case of the low-leverage group. To generalize this finding to an international level using the data from 26 countries from 1970 to 1999, Almeida et al (2006) confirms that house prices respond more rapidly to income shocks in countries having a higher ceiling on LTV ratios. On the basis of these two findings, it can be concluded that the liberalization measures taken from the 1980s onwards have modified the way in which, and the extent to which, house prices respond to changes in the house price determinants. As is widely noted, financial

liberalization is one of the sources of the greater volatility of housing observed in the last decade compared to the period before liberalization was initiated.

2.9.5 Macroeconomic Determinants

According to Deutsche Bank Research (2008) the major macro indicators for the real estate market are Gross Domestic Product (GDP) growth trend, GDP per capita, population, median age, population growth, bank lending rate, unemployment rate and average inflation. Besides, Ducoulombier (2007) mentions other sources of systematic risk as Employment, Interest rates and unexpected inflation. The latter examples, with the enumeration of many influencing factors, show how macroeconomics field is complex. In general, when macroeconomists try to figure out the set of influential macro variables, they almost all agree on the use or on a variant of GDP, interest rate, tax rates, real wage and rate of employment. Going even further, the research from Liow et al. (2006, p. 301) analyze macroeconomics influences on worldwide property market and finds that GDP, inflation and interest rate are the most relevant macroeconomic indicators to examine.

GDP is the first important macroeconomics measure. It measures the total value of domestic production for the entire domestic economy. The aggregate integrates consumers, governments and investors spending money within the nation, and also includes the net exports (exportations – importations). As GDP is an indicator of the health of the economy, a high GDP is synonym of a favourable economic condition value and that should positively drive investments. Consumers spend their money in renting or owning houses, investors in new constructions and governments in infrastructures. Real GDP contrary to nominal GDP allows to erase the inflation effect and to compare the measure over our time line consideration of five years. Inversely, when unfavourable economic conditions occur, that should negatively affect investments.

Case, Goetzmann, and Rouwenhorst (2010) explored returns in global property markets, and found the returns heavily related to fundamental economic variables such as GDP, inflation and economic growth, while Ling and Naranjo (2005) identified growth in consumption, real interest rate, the term structure of interest rate, and unexpected inflation as systematic determinants of real estate returns. In addition studies by Huczynski and Buchanan (2013) highlighted GDP as being the most important influence on return levels, whereas unemployment rate was found not to have any significant impact. The insignificance of

employment was backed up by De Wit and Van Djik (2007) conclusions. The most extensive research of real estate and the macro economy is in terms of real estate's hedging capabilities against inflation. Besides, Hoskins, Higgins and Cardew (2013) found that GDP growth, inflation and unemployment show significant relations with composite property returns.

Rising real GDP will increase the wealth of the population as a whole contributing to an increase in discretionary incomes. This income can be channeled into asset markets, namely real estate. The real estate sector which is governed by long construction lags thus will see rising real estate prices and also rentals. There is also some basis that the stock market also impacts the real estate market. Bardhan, Datta, Edelstein & Lum (2013) have documented significant positive impact of stock equity wealth on the number of new private housing units in Singapore. This suggests that an increase in the stock market would increase the wealth of investors who eventually cash out and reinvest their profits into real estate. Thus, the wealth effect in the stock market spills over to the real estate market.

According to Debelle (2013), investigation relates to the importance of inflation as a driver of housing prices. On average, across countries, inflation accounts for more than half of the total variation in house prices. In the short run, the size of the impact is even larger. Debelle alludes that its contribution nears 90% of the total price variation in the one-quarter horizon and drops to about two thirds over the one-year horizon. This strong influence of inflation is more important when one considers that house prices are measured in real terms. There are two potential explanations for this finding. The first relates to the dual function of residential real estate as consumption good and investment vehicle. As such, it is often used by households as the main hedge against the risk that inflation might erode their wealth. The fact that the purchase of property is typically financed with nominal debt makes it more attractive in this respect. A high degree of inflation persistence also suggests that the effects of innovations in inflation on house prices are likely to be felt over longer horizons. Higher uncertainty levels about future expected returns on investments in bonds and equities associated with high inflation also contribute to the attractiveness of real estate as a vehicle for long-term savings. The second explanation is linked to the impact of inflation on the cost of mortgage financing and generally suggests that higher inflation would have a negative impact on house prices. If financing decisions are more sensitive to the nominal yield curve than to real rates, one would expect housing demand, and thus real house prices, to respond to changes in inflation and to expected inflation. In addition, inflation may also proxy for the

prevailing financing conditions, which have an impact on the demand for real estate. High inflation and high nominal interest rates backload the repayment of the mortgage principal and increase the real value of repayment in the early part of the repayment period of the loan, thus dampening the demand for housing. In Kenya, the housing sector has been characterized by inadequacy of affordable and descent housing, low level of urban home ownership, extensive and inappropriate dwelling units, including slums and squatter settlements.

2.9.6 Government Policies/Subsidies

Legislation can have a sizable impact on property demand and prices. Tax credits, deductions and subsidies are some of the ways the government can temporarily boost demand for real estate for as long as they are in place. Napier (2006) shows that in spite of the success recorded in the first 10 years in the provision of housing to the poor, there are a number of reasons impeding the provision of housing that have contributed to the decline in the number of units built annually since 2000 which translate to higher rent rates. These reasons for this decline as stated by Napier (2006); NDoH (2009) are highlighted below: the inability of the social housing programme to deliver at scale, non-creation of satisfactory integrated housing environments, the withdrawal of the large construction groups from the low income market, high land costs in advantageous locations, differences in the interpretation and application of the housing policy, high building costs in areas where land is more affordable but geological and topographical conditions are not ideal.

Apart from public and private rental housing, other forms of tenure exist in some countries. After the Second World War, the Netherlands had to cope with a severe housing shortage. To deal with this problem, the Dutch government launched a broadly conceived subsidy programme to finance the construction of social housing. The housing associations were formed which played a major role. Approximately 500 housing associations still exist and they manage two million housing units, which is about 30% of the total housing stock. This makes the subsidized rented sector in the Netherlands far larger than in any other European country (Acioly, 2005). In many countries varying government incentives have been introduced with the intention of bridging this gap by providing financial hand-outs although arguably this has indirectly contributed to even higher house prices and issues for social sustainability (Forster-Kraus et al., 2009). This was the scenario in Germany for example.

Housing affordability not only relates to direct costs, but to the wider costs imposed on the wider community due to overcrowding and poor housing conditions. The land use planning system, which impacts on the availability of residential land, has been a key to the supply of affordable housing through the housing market. In addition, the planning system contributes to the preservation of existing sources of low cost accommodation, the design and configuration of new housing, and timing and costs associated with the development process (Milligan et al., 2013). In addition, the planning system can be used to promote and procure affordable housing through a mix of regulations and incentives. In some countries, these could include inclusionary zoning requirement to allocate affordable housing in some (or all) locations or developments. Aversion of low-cost rental housing investment is an effect of 'housing markets, investor economics, location choices, and negative gearing' (Seelig et al., 2009).

Lastly, Negro and Otrok (2007) delve into the magnitude of response of house prices to the monetary policy shocks during the (housing) boom period after 2000. To resolve the well-known problem that the aggregate housing price index blurs the unique properties of housing markets in each state, a dynamic factor model is employed and the aggregate housing price index is decomposed into three hierarchical levels which are national, regional and state level. It finds that the impact of the monetary policy shock alone is not negligible, but the magnitude of its influence is trivial compared to the influence of the high growth rate of house prices. However, it is questionable whether the maintained assumption is plausible; that house prices can be decomposed into three distinct dimensions and monetary policy influences only the national factor. This assumption might result in underestimating the effects of monetary policy since local factors presumably are influenced by changes in policy rates

2.10 Real Estate and Home ownership for Low-Income Households

The global financial crisis of 2008-2010 adversely affected real estate pricing and affordability and the middle class and low-income earners were worst hit by the effects of the crisis. Studies carried out indicate that housing represents an important arena in which racial, tribal, and class inequalities continue to manifest. In a study carried out in the USA, it was noted that persistent economic disparities as well as race-specific preferences to housing was a major factor in choice (Roscigno, Karafin & Tester, 2009a).

Many studies have been carried out on real estate and home ownership in low-income segments of populations. In assessing low-income housing market in Jordan for example, Al-Homoud et al (2009) established that the most plausible causalities of undersupply of low-income housing include macro-environment attributes and controllable-management aspects such as lack of human resources and capacity building; real estate attributes such as lack of marketing skills and sales advertising; technology and construction industry attributes such as inaccessible appropriate building technology and affordable construction; land ownership and site selection limited to the developer(s) geographical area; uncontrollable financing; government policies, and social and cultural issues such as religion (Al-Homoud, Al-Oun & Al-Hindawi, 2009).

A study by Roscigno et al (2009) on real estate and home ownership established that there are complexities and processes that arise related to real estate ownership and affordability that have strong correlation to racial discrimination. This was referred to as racial housing discrimination (Roscigno et al., 2009a). This would be likened to racial/tribal housing discrimination in the Kenyan context in which certain urban estates or areas were initially developed and marketed for certain communities; a practice predominantly propagated from the colonial times. This has over time changed somewhat but those initial building blocks are generally still in place. In the study above, it was observed that black-white inequality remained a lingering social problem in the US, and this was manifest in the housing arena. Explanations for this ranged from persistent economic disparities to race-specific housing preferences (Roscigno et al., 2009a). Roscigno et al (2009) noted that exclusionary and non-exclusionary practices that impacted on this discrimination along racial and economic ability lines were identified. By exclusionary discrimination; these are actions and practices that exclude an individual or family from obtaining the housing or property of their choice. In contrast, non-exclusionary discrimination referred to discriminatory actions and practices that occur within an already established housing arrangement, most often entailing racial harassment, differential treatment of potential buyers or tenants, or disparate application of contractual terms and conditions of residency.

In a similar study, Liow et al (2008) observed that performance measures in real estate guide how investors and developers perceive real estate from the business, financial and capital market perspectives. The trio of business, financial, and capital combine to position real estate in its proper context. How these three perspectives are managed determine the pricing

and subsequently the ownership of real estate (Liow & Ingrid, 2008). Drawing from this study, affordability and ownership of real estate in Kenya may also be addressed. The three perspectives would equally have to be combined and localized to suit the Kenyan environment.

Cultural and health factors also influence building of housing, other real estate and community standards as well. It has been noted that housing, building and neighborhood codes are of value to countries at every level of development. Overall, housing is the most expensive component of the man-made habitat. This high cost may be mitigated (and subsequently lowered) by lowering of housing codes to suit specific neighborhoods, managing density of populations (as opposed to congestion) and guided by cost-benefit ratios, it is noted that by lowering standards to acceptable and manageable levels, affordability and ownership may be improved (Conley, 2011).

Studies carried out indicate that environmental regulations on housing development and operation enhanced housing and community design, through more rigorous planning techniques. However, these environmental regulations raised the cost of housing and real estate. It was further noted that housing costs could be reduced by streamlining review procedures, limiting the scope of review to matters affecting the physical environment and considering more carefully the fiscal effects of environmental policies. This resonates with the Kenyan situation where we now have the National Environmental Management Authority (NEMA) which has come on board over the last, close to ten years, to regulate and authorize developments based on Environmental Impact Assessment (EIA) reports. These reports add extra costs on the final real estate costs and impact on affordability and ownership. Managing these environmental approval processes effectively would help lower costs and improve affordability.

Further, a study carried out to determine the main factors that influence construction of affordable housing in Saudi Arabia reports that inadequate labour availability, materials standards, design quality and design changes are most severe with resultant high cost ratings (Assaf, Bubshaitr, & Al-Muwasheer, 2010). Almost similar conditions obtain in Kenya with regard to high quality labour, materials standards and design quality and managing these effectively and efficiently would impact on real estate and housing affordability and ownership.

Hebert and Belisky (2008), argue that there is need to support the development of effective policies for promoting and supporting home ownership. In the study, there is explicit focus on the low-income and minority households' experiences with real estate and ownership.

The literature reviewed above as gleaned from the relevant literature by various authors and publishers does point to the need and relevance of addressing the real estate development and ownership for the low-income earners amongst the Kenyan population. From the experiences noted for minority groups and the related social effects, the case for low-income real estate and home ownership becomes fairly clear.

2.11 Research Gaps

Lack of housing availability and affordability has a great impact on lower income groups in Kenya and on their well-being physically and psychologically (Seelig et al., 2009). Without long term housing stability, such groups will find difficulties in achieving employment and community stability (Song, 2005).

The Kenya government's official policy of financing, constructing and facilitating access to housing continued into the 1980s. However, the reality was not matched by the intention. Implementation has often been piecemeal and there are continuing house shortages. Lack of affordable housing supply has been the main cause of declining housing affordability and associated problems. In addition, scarcity of land supply, limited government subsidies' and an increase in housing costs have not offered incentives for investment in affordable housing

According to Koech (2013), Nairobi was rated the largest residential town in Kenya in 2011 by the UN habitat accounting for 39% real estate development followed by Mombasa at 21% and Nakuru County at 13%. The real estate market in Nairobi County, Kenya is unique compared to other Counties in the Country. Out of the 47 Counties in Kenya, Nairobi County is unique due to the increasing population and rural to urban migration in Kenya which has caused the rise in prices of the real estate sector. Nairobi County has an estimated population of more than 3 million people as per the last census of year 2009 (Kenya National Bureau of Statistics Web). Prices for commercial space have more than doubled in the last four years with office space costing up to Sh60 per square foot from about Sh30 in 2008. The high demand has been triggered by large corporate institutions such as banks, supermarkets, universities and colleges in town which normally require huge space.

Though there are differences in inter-city prices, very little is documented about the factors that determine the price of houses which can constitute a source of distortion. Although literature has been reviewed on determinants of the real estate prices showing how its various factors affect the rates, most of these studies have been done in other countries whose strategic approach and financial footing is different from that of Kenya. None of them therefore focused on how these apply in the Kenyan case. It is evident therefore that a literature gap exists on the critical factors affecting pricing of real estate for the low income people in Kenya which this study seeks to fill by focusing on Nairobi County.

2.12 The Conceptual Framework

From the foregoing literature review, a conceptual model is developed. The building blocks for the conceptual model are the key factors that drive real estate development and pricing which form the independent variables. The factors that impinge on the independent variables to influence pricing are the mediating variables. And subsequent ownership of real estate (especially by the low-income earners) is the dependent variable.

The Conceptual Model comprises three blocks, A, B and C. Block A defines the Independent Variables (IV) that affect real estate development and would be categorized as the production parameters. Block B defines the Moderating/Mediating Variables (MV) and these are the intermediate parameters that impinge on the real estate development and pricing. These parameters define how the input parameters relate with the inputs to create the final output product. And Block C contains the Dependent Variable (DV); defining the possible outcome with regard to real estate ownership by the low-income earners and hence the focus of the study.

Some of the Terms used in the literature review were used to develop the conceptual model.

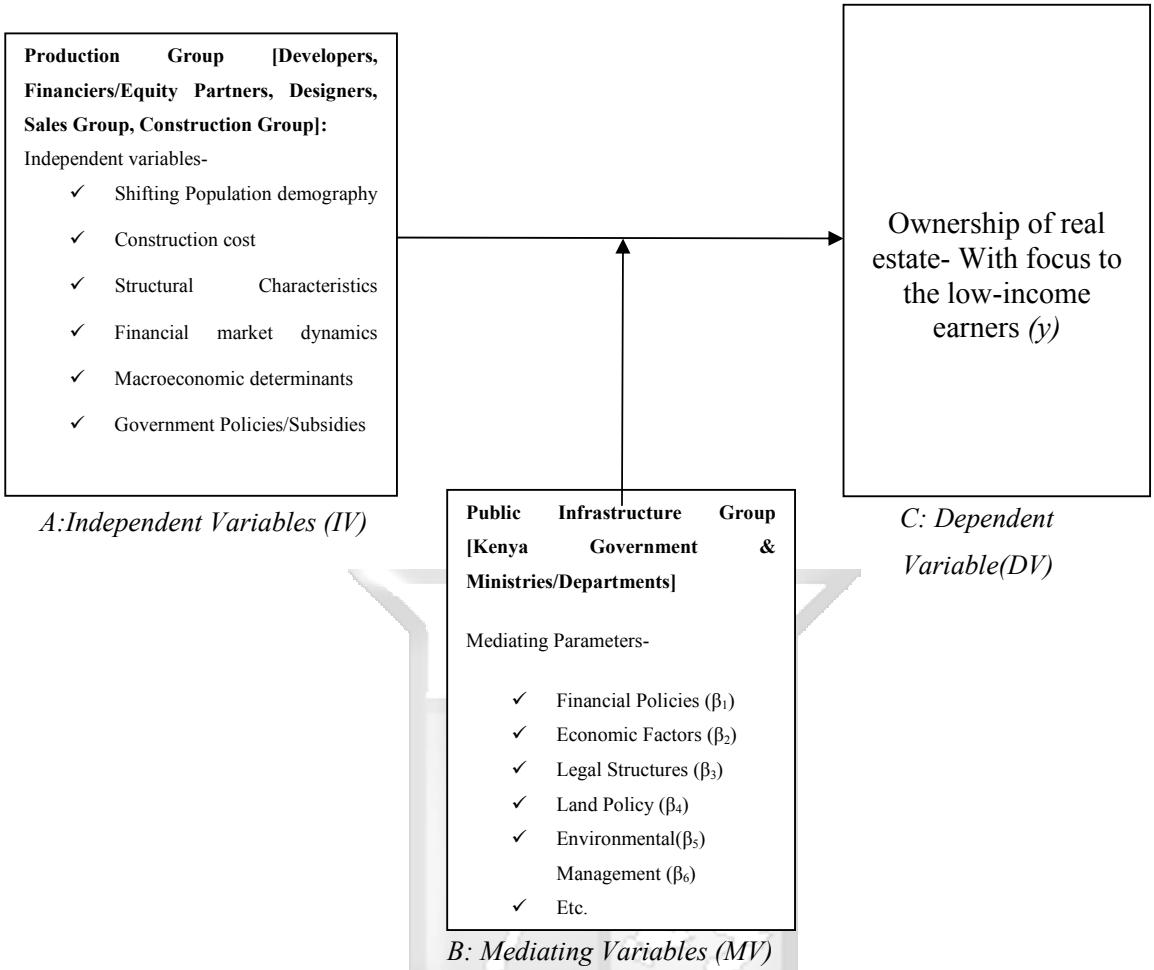

Figure 2.1: Conceptual Framework

Population demography will be measured using income level, household size, migration patterns of people and population growth.

Construction cost will be measured using cost of materials, cost of land, cost of specialized and casual labour and indirect costs such as statutory and infrastructure charges.

Structural characteristics will be measured using functional designs, construction methods, location/ accessibility, type of property, construction quality and land developing companies.

Financial market dynamics will also be measured using equity/credit availability, credit rating, nominal interest rates (long-term), debt appetite, financial liberalization and planning strategies in the financial market

Macroeconomic determinants will be measured using real gross domestic product (GDP), bank lending rate, unemployment rate and average inflation.

Government policies/subsidies will be measured using governmental stimulus program, tax credits and deductions, government subsidies, land use planning system, zoning rules, building regulations, administrative procedures and financial policies.

CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter, the research philosophy and design are discussed. Also population and sampling techniques used in the study are given. Further details on the data collection methods employed, data analysis, and the research quality and ethical considerations are also discussed.

3.1 Research Design

The research applied exploratory research design and a causal approach. In this case the research sought to examine relevant data set(s) and identify potential relationships between the variables as proposed in the conceptual framework with regard to the study.

Exploratory design approach involved generation of data in a form which could be subjected to quantitative analysis in order to explore and give better understanding of effects of various factors on pricing and eventual ownership of real estate and in particular with a focus on the low-income earners in Kenya.

3.2 Strategy for the Research

The study employed a survey strategy. Quantitative research would usually be associated with experimental and survey research strategies. Under the survey bit of such a research, the questions answered are Who?, What?, Where?, and How Much? (Saunders et al, 2012).

Survey research strategy is normally conducted through use of structured questionnaires or structured interviews, or possibly structured observations. Survey strategy is usually conceived as authoritative and data collected through this approach can be useful in suggesting reasons for observed relationships between a given set of variables and for developing an appropriate model for such relationship(s).

3.3 Population

A target population in a study is the specific population about which the researcher desires information. Makena (2012) defines a population as being a well-defined set of people, services, elements, and events, group of things or households that are being investigated in a study.

Of interest as a population for this study, were employees and practitioners of the production group that included the commercial banks (dealing in real estate financing), mortgage firms, construction consultants, contractors and property management consultants and marketers.

The second group of interest was the management and employees of the public infrastructure group that included Ministry of Lands, Housing & Urban Development, National Environment Management Authority (NEMA), National Land Commission (NLC), Ministry of Devolution and Planning, The Nairobi County Government. The two categories of production and public infrastructure groups were selected as they represent the key drivers of the real estate industry.

From data available from Kenya National Bureaucracy of Statistics (KNBS), Kenya Facts, 2014, the number of officially recognized institutions for the various population groups for the study are as in Table 3.1.

Table 3. 1: Target population

Description of Institution or Group	**Population**	**Proportion Percentage**
Commercial Banks (dealing in real estate financing) and Mortgage firms managers	37	7.3
Construction Consultants	41	8.1
Contractors	52	10.2
Property Management Consultants and marketers	165	32.4
Ministry officials	35	6.9
Government agencies officials	136	26.7
Nairobi County Government officials	43	8.4
Total	**509**	**100.0**

3.4 Sampling Technique and Sample Size

Sampling may be defined as the selection of some part of an aggregate (population) or totality on the basis of which a judgment or inference about the aggregate or totality is made (Kothari, 2013). According to Saunders et al (2012), sampling is the procedure through which some of the cases or elements in the population are selected so as to be as fairly representative of the whole population as possible to enable the researcher answer the research questions.

The study adopted non-probability approach to sampling with purposive sampling as the selected approach. This approach was chosen based on the selected groups appropriate for the study. To create heterogeneity in the sampling due to the possibility of bias from the interviewees, the population was further placed in quotas. This is achieved in the study by dividing members of a given population group into homogenous sub-groups before sampling. To achieve mutual exclusivity for each stratum, every element in the population was only assigned to one quota and for the quota to be collectively exhaustive, no population element was excluded. Purposive sampling was then used to select the survey units.

A sample population of 219 was arrived at by calculating the target population of 509 with a 95% confidence level and an error of 0.05 as applied by Kothari (2013)

$$n = \frac{z^2.N.\partial_p^2}{(N-1)e^2 + z^2\partial_p^2}$$

Where; n = Size of the sample,

N = Size of the population and given as 509,

e = Acceptable error and assumed as 0.05 as standard practice,

∂_p = The standard deviation of the population and assumed as 0.5 where not known,

Z = Standard variance at a confidence level given as 1.96 at 95% confidence level assuming normal distribution.

Thus sample size is thus,

$$n = \frac{\{(1.96)^2 \times 509 \times (0.5)^2\}}{\{(509-1) \times (0.05)^2 + (1.96)^2 \times (0.5)^2\}}$$

$$= \frac{488.8436}{(1.27 + 0.9604)}$$

$$= 219.173$$

$$\approx \mathbf{219}$$

From the foregoing the sampling ratio which is the ratio of the sample size to the population is thus;

Sampling ratio = $\frac{219}{509}$ = 0.43 (Approx.)

Table 3. 2: Sampling Frame

Description of Institution or Group	Population	Ratio	Sample Size
Commercial Banks (dealing in real estate financing) and Mortgage firms managers	37	0.43	16
Construction Consultants	41	0.43	18
Contractors	52	0.43	22
Property Management Consultants and marketers	165	0.43	71
Ministry officials	35	0.43	15
Government agencies officials	136	0.43	59
Nairobi County Government officials	43	0.43	19
Total	**509**		**219**

3.5 Data Collection

For the study, primary data was collected from the sampled organizations and/or groups using structured questionnaires. The questionnaires (See sample questionnaire attached in Appendix I) had two separate sets. Part A of the questionnaire dealt with relevant questions seeking to establish the suitability of the respondents through their demographics. Part B has relevant questions to address the research questions. Secondary data was collected on the house pricing index in the last ten years from the Kenya National Bureau of Statistics (KNBS).

3.6 Collection of Data Procedure

The responses to the questionnaires were interviewer-completed for some of the groups (where expediency demanded so) or hand–delivered to every respondent and collected later for the corporate organizations or consulting firms.

Research assistants were used to collect data from the sample groups. They visited the identified organizations/groups, fully equipped with the questionnaires and an authorization letter from Strathmore Business School, allowing them to carry out the data collection. For the companies in the target groups, the management staff was interviewed.

3.7 Pilot Testing

3.7.1 Validity of Instruments

Validity is the degree to which results obtained from the analysis of the data actually represents the phenomenon under study. Validity was ensured by having objective questions included in the questionnaire and by pre-testing the instrument to be used to identify and change any ambiguous or offensive questions and technique. Expert opinion was sought from my supervisor to comment on the representativeness and suitability of questions and give suggestions of corrections to be made to the structure of the research tools. This helped to improve the content validity of the data that was collected.

3.7.2 Reliability of Instruments

Reliability on the other hand refers to a measure of the degree to which research instruments yield consistent results (Babbie, 2013). Reliability is increased by including many similar

items on a measure, by testing a diverse sample of individuals and by using uniform testing procedures. In this research, a pilot group of 31 individuals from the target population was used to test the reliability of the research instruments. In order to test the reliability of the instruments, internal consistency techniques was applied using Cronbach's Alpha. The alpha value ranges between 0 and 1 with reliability increasing with the increase in value. Coefficient of 0.7 is a commonly accepted rule of thumb that indicates acceptable reliability (See Mugenda, 2008).

3.8 Data Analysis

After data collection, data analysis was done. This is an important process as it organises the data to make it sensible. Data analysis tools used were dependent on the type of data to be analyzed considering whether the data was qualitative or quantitative. This study used a combination of data analysis methods that included basic and inferential statistics. The quantitative data in this research was analyzed by descriptive statistics using Statistical Package for Social Sciences (SPPS) Version 21 and Eviews. Descriptive statistics include mean, frequency, standard deviation and percentages to profile sample characteristics and major patterns emerging from the data. In addition to measures of central tendencies, measures of dispersion and graphical representations were used to tabulate the information. To facilitate this, Likert Scale was used which enables easier presentation and interpretation of data. Data was presented in tables, charts and graphs.

Factor analysis which is a systematic, statistical procedure used to uncover relationships amongst several variables was also conducted. This procedure enables numerous correlated variables to be condensed into fewer dimensions known as factors. In the context of this research, the variables are the degree of agreement with various specific perception statements while the factors are the general underlying constructs. The factor analysis for this research was conducted using a statistical package, SPSS. The purpose of factor analysis is to discover simple patterns in the pattern of relationships among variables. In this procedure, rotation is applied to identify meaningful factor names or descriptions. A rotation, which requires that the factors remain uncorrelated, is an orthogonal rotation, while a rotation, which requires the factors to be correlated, is called Oblique rotation. In this study, oblique rotation using Promax was carried out because the proposed framework indicates that the underlying constructs and variables are inter-correlated. Factor rotation is used to re-orient the factor loadings so that the factors are more interpretable. Use of Oblique rotation allows

for correlations between factors since many attitudinal dimensions are in fact likely to be correlated. For easier interpretation of the factors, only the pattern matrix is examined. The factor extraction method adopted for this study is principal axis factoring. Principal Axis Factoring, unlike principal component analysis, relaxes the assumption that the communality is equal to one. As a result, using this method enables the factor loadings to be higher, which leads to greater interpretability.

Correlation analyses were performed to determine if any variables are correlated and check for multicollinearity. The Pearson correlation coefficient (r) was used to identify the magnitude and the direction of the relationships between variables. For example, the value can range from -1 to +1, with a +1 indicating a perfect positive relationship, 0 indicating no relationship, and -1 indicating a perfect negative or reverse relationship (as one grows larger, the other grows smaller).

In addition, a multivariate regression model was applied to determine the relative importance of each of the variables with respect to their effect on pricing. Multiple regressions is a flexible method of data analysis that may be appropriate whenever quantitative variables (the dependent) is to be examined in relationship to any other factors (expressed as independent or predictor variable). Relationships may be non-linear, independent variables may be quantitative or qualitative and one can examine the effects of a single variable or multiple variables with or without the effects of other variables taken into account, (Cohen, West and Aiken, 2003). The regression model will be as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \quad \text{.....(1)}$$

Where:

Y = Ownership of real estate among the low-income earners

β_0 = Constant Term

$\beta_1, \beta_2 \ldots \beta 7,$ = Beta coefficients

X_1 = Shifting Population demography

X_2 = Construction cost

X_3 = Structural Characteristics

X_4 = Financial market dynamics

X_5 = Macroeconomic determinants (GDP, Inflation and Level of interest rate)

Where GDP Growth Rate = $\frac{\text{Current year GDP-last year GDP}}{\text{Current year GDP}} \times 100$

X_6 = Government Policies/Subsidies

ε = Error term

Inferential statistics such as non-parametric test which include analysis of variance (ANOVA) were used to test the significance of the overall model at 95% level of significance. According to Mugenda (2008) analysis of variance is used because it makes use of the F–Test in terms of sums of squares residual. All necessary diagnostic tests were performed.

3.9 Research Ethics

As this research was undertaken, there was due consideration given to ethical issues that emerged as objectives were addressed with regard to the issue of empowering low-income earners in the real estate industry investment and ownership; and to collect, analyze and report on data (Saunders et al, 2012). High standards of behaviour were upheld that guided conduct in relation to the rights of those whom, through purposive sampling, became the subject of the study. High levels of integrity and objectivity by acting openly, being truthful and promoting accuracy when dealing with respondents and in analysis and reporting of results were observed.

CHAPTER FOUR

RESEARCH FINDINGS PRESENTATION

4.1 Introduction

This chapter presents data analysis, interpretation and presentation. This chapter presents analysis of the data on the critical factors affecting pricing of real estate; a case for the low income people in Nairobi, Kenya. Data has been presented in form of tables. The study targeted 219 respondents. However, 174 questionnaires were returned duly filled giving a response rate of 79.45%. Section 4.2 gives the background information of the study. Sections 4.3 and 4.4 give the findings and discussion based on the study objectives.

4.2 Background Information

The study initially sought to establish the background information of the respondents. This is vital as it would reflect on the reliability of information based on the gender, highest education level and duration of working in the organization.

4.2 Exploratory Demographic Information

Table 4. 1: Gender of the respondents

	Frequency	**Percent**
Male	106	60.9
Female	68	39.1
Total	**174**	**100.0**

From the findings, majority 60.9% of the respondents were male while women constituted 39.1% of the respondents. This shows that the construction industry is a male dominated field.

Table 4. 2: Age of the respondents

	Frequency	Percent
21 -30 years	5	2.9
31-40 years	66	37.9
41-50 years	95	54.6
Above 50 years	8	4.6
Total	**174**	**100.0**

On the age of the respondents, the study established that slightly more than half (54.6%) of the respondents were aged between 41-50 years, 37.9% were aged between 31-40 years, 4.6% were above 50 years of age while a 2.9% of the respondents were aged between 21-30 years. This shows that most of the players in the construction industry are middle aged.

Table 4. 3: Highest education level

	Frequency	Percent
Diploma	33	19.0
Undergraduate	124	71.3
Post Graduate	17	9.8
Total	**174**	**100.0**

The study also sought to establish the respondents' highest level of education. According to the findings, the majority of the respondents (71.3%) had an undergraduate degree, 19% had a diploma, while 9.8% of the respondents had a post graduate degree.

Table 4. 4: Duration of working in the Organisation

	Frequency	Percent
Less than 1 year	22	12.6
1-5 years	64	36.8
6-10 years	67	38.5
More than 10 years	21	12.1
Total	**174**	**100.0**

On the years of service/working period at their organization, the findings in table 4.4 show that 38.5% of the respondents had worked in their current organization for 6-10 years, 36.8% had worked for 1-5 years, 12.6% had worked for less than 1 year while 12.1% of the respondents had worked in their current organization for more than 10 years.

4.3 Factors Affecting Pricing of Real Estate among the Low-Income

The study sought to establish the critical factors driving real estate pricing among the low-income people in Nairobi, Kenya.

Table 4.5: Summary response on performance level on acquisition and ownership of real estate among the low-income earners in Nairobi

	Frequency	Percent
Greatly Improved	44	25.3
Improved	86	49.4
Constant	17	9.8
Decreasing	18	10.3
Greatly decreased	9	5.2
Total	**174**	**100.0**

Regarding the trend of acquisition and ownership of real estate among the low-income in Nairobi, 49.4% of the respondents indicated that acquisition and ownership of real estate among the low-income in Nairobi has improved, 25.3% were of the view that it has greatly improved, 10.3% said it was decreasing, 9.8% felt it was not changing while 5.2% said it had greatly decreased.

Table 4. 6: Extent that real estate pricing affect acquisition and ownership among the Low-Income in Nairobi

	Frequency	Percent
Little extent	7	4.0
Moderate extent	35	20.1
Great extent	78	44.8
Very great extent	54	31.0
Total	**174**	**100.0**

On the extent that real estate pricing affect acquisition and ownership among the Low-Income in Nairobi, 44.8% felt it affect to a great extent, 31% said to a very great extent, 20.1% said to a moderate extent while 4% said to a little extent.

4.3.1 Population Demography

The study sought to establish the extent that shifting population demography affects acquisition and ownership among the low-income. The findings are presented in table 4.7. The study questions were on a Likert Scale of between 1 and 5. Where 1 = Not at all; 2 = Little extent; 3 = Moderate extent; 4 = Great extent; and 5 = Very great extent. The scores were calculated to mean scores which were interpreted as 4.5 - 5.0 Very great extent; 3.4 - 4.4 Great extent; 2.5 - 3.4 Moderate extent; 1.5 - 2.4 Little extent; and 0.0 - 1.4 Not at all.

Table 4. 7: Extent that population demography affects pricing of real estate

Facets of population demography	Mean	Std. Deviation	Coefficient of Variation
Income level	4.0862	.66152	0.1619
Household size	3.8621	.68295	0.1768
Migration patterns	3.8161	.77577	0.2033
Population growth	4.2644	.61691	0.1447
Consumer tastes and preferences	4.0632	.51736	0.1273
Average	**4.0184**	**0.6509**	**0.1628**

The respondents indicated that the various aspects of shifting population demography affect pricing of real estate among the low-income to a great extent with population growth having a mean score of 4.2644, income level having a mean score of 4.0862, consumer tastes and preferences having a mean score of 4.0632. These findings concur with Singh (2009) who conducted a landmark housing demography study to examine the links between demography and real estate. The study established that, an age dependent demand variable had a significant influence on the level of housing prices in the US. Seboru (2006) also attested that, there is a high and increasing demand for housing in the metropolitan areas, but the supply of apartments is growing very slowly thereby causing an upsurge in the real estate prices.

The study also found that household size had a mean score of 3.8621 and migration patterns having a mean score of 3.8161. This notwithstanding, there was general consensus among the respondents on the effect of consumer tastes and preferences and population growth pricing of real estate among the low-income in Nairobi while their opinions were skewed on the effect of household size and migration patterns as shown by the Coefficient of variation. This is in line with Poterba (2011) who clarified that house prices are affected by demographic factors, representatively by the number of households. However, he argues, the timing and the magnitude of the effect are hard to predict as these factors are part of a broader set of economic forces influencing house prices.

4.3.2 Construction cost

The respondents were asked to indicate extent that construction costs affect pricing of real estate among the low-income in Nairobi. Mean score and standard deviation for each parameter were computed and presented in table 4.8. The respondents were asked to indicate the extent to which the respective factors as tabulated below affect real estate pricing. The study questions were on a Likert Scale of between 1 and 5. Where 1 = Not at all; 2 = Little extent; 3 = Moderate extent; 4 = Great extent; and 5 = Very great extent. The scores were calculated to mean scores which were interpreted as 4.5 - 5.0 Very great extent; 3.4 - 4.4 Great extent; 2.5 - 3.4 Moderate extent; 1.5 - 2.4 Little extent; and 0.0 - 1.4 Not at all.

Table 4. 8: Extent that construction cost affect pricing of real estate among the low-income in Nairobi

Construction costs	Mean	Std. Deviation	Coefficient of Variation
Cost of Materials	3.9483	0.4921	0.1246
Cost of land	3.7816	0.5251	0.1389
Cost of specialized and casual labour	3.6379	0.7058	0.1940
Indirect costs such as statutory and infrastructure charges	3.5874	0.8640	0.2408
Average	**3.7388**	**0.6468**	**0.1746**

According to the findings, the construction costs that affect pricing of real estate among the low-income in Nairobi to a great extent include cost of materials as illustrated by a mean score of 3.9483, cost of land as illustrated by a mean score of 3.7816, cost of specialized and casual labor as illustrated by a mean score of 3.6379 and indirect costs such as statutory and infrastructure charges as illustrated by a mean score of 3.5874. In addition, it was clear that the cost of materials, cost of land and cost of specialized and casual labor had a great effect on acquisition and ownership among the low-income in Nairobi as shown by the general consensus on these parameters while the respondents opinions were divergent with regard to the effect of indirect costs such as statutory and infrastructure charges. This is in agreement

with Blackley & Follain's (2008) that housing prices are driven primarily by the cost of land and construction inputs and that causes of construction cost escalations can be numerous and any effort to ascertain them in order to explain regional disparities requires that all the major construction cost components affected by the increase must first be recognized. Gurran, Ruming, Randolph & Quintal (2008) also added that limited land supply, detailed development assessment processes, planning strategies in the financial market and shifting demography have pushed up the total cost of construction in the real estate resulting to high pricing of real estate.

4.3.3 Structural Characteristics

The study also required the respondent to indicate the extent that structural characteristics affect real estate pricing and subsequently acquisition and ownership among the Low-Income in Nairobi.

Table 4. 9: Extent that structural characteristics affect pricing of real estate among the Low-Income in Nairobi

Structural characteristics	Mean	Std. Deviation	Coefficient of variation
Functional Designs	3.8563	0.5344	0.1386
Construction Methods	4.0287	0.6028	0.1496
Location/ Accessibility	4.2069	0.4348	0.1034
Type of property	3.7126	0.5568	0.1500
Construction quality	4.0172	0.5097	0.1269
Land developer companies	3.3046	0.6052	0.1831
Average	**3.8544**	**0.5406**	**0.1419**

From the study findings, majority of the respondents indicated that the structural characteristics that had a great effect include location/ accessibility as shown by a mean score

of 4.2069, construction methods as shown by a mean score of 4.0287, construction quality as shown by a mean score of 4.0172, functional designs as shown by a mean score of 3.8563 and type of property as shown by a mean score of 3.7126 while land developer companies had a moderate effect as shown by a mean score of 3.3046. Nevertheless, there was consensus on the effect of location/ accessibility, construction quality, construction methods and functional designs among the respondents while they differed on the effect of type of property and land developer companies as depicted by the Coefficient of variation. The findings are in line with Zietz et al (2008) findings that varying characteristics of real estate properties account for their varying sales prices. Cahill (2010) clarified that the closer the land is to commercial centers or recognized vocational spots, the more expensive the land becomes. The second one is accessibility. Roads and other infrastructure cost a great deal of money to build and maintain which is why lands supported with paved streets cost more than lands surrounded with dirt roads.

4.3.4 Financial Market Dynamics

The study further sought to find out the effect of financial market dynamics on pricing of real estate among the low-income in Nairobi.

Table 4. 10: Extent that financial market dynamics affects pricing of real estate among the Low-Income in Nairobi

Financial market dynamics	Mean	Std. Deviation	Coefficient of variation
Supply elasticity of housing units	4.1782	0.5764	0.1380
Return on Investment (ROI)	4.0402	0.6394	0.1582
Market Segmentation	3.0241	0.8073	0.2670
Buyer Power	4.1322	0.4601	0.1340
Expectation	3.8793	0.6291	0.1622
Equity/ Credit availability	4.0690	0.6679	0.1641
Credit rating	3.6667	0.6391	0.1743

Nominal interest rates (Long-term)	4.3897	0.6937	0.1580
Debt appetite	3.5862	0.7059	0.1968
Financial liberalization	3.8736	0.6852	0.1769
Planning strategies in the financial market	3.9195	0.2728	0.0696
Average	**3.88415**	**0.61665**	**0.16425**

From the study findings portrayed in table 4.10, the respondents indicated that the financial market dynamics that affect pricing of real estate among the low-income in Nairobi to a great extent include supply elasticity of housing units as shown by a mean score of 4.1782, buyer power as shown by a mean score of 4.1322, return on investment (ROI) as shown by a mean score of 4.0402 and expectation as shown by a mean score of 3.8793 while market segmentation had a moderate effect on the pricing as shown by a mean score of 3.0241. In addition, there was consensus on the effect of supply elasticity of housing units and buyer power while the respondent's opinions were skewed on the effect of market segmentation on pricing of real estate among the low-income in Nairobi. The findings are in line with Barker (2013) findings that complex and inefficient local zoning regulations and a slow authorization process are among the reasons for the rigidity of housing supply, underlying both the trend in the rise of house prices and their high variability.

The study further found that majority of the respondents indicated that the aspects of financial market dynamics that affect pricing of real estate among the low-income in Nairobi to a great extent include nominal interest rates (long-term) as shown by a mean score of 4.3897, equity/ credit availability as shown by a mean score of 4.0690, planning strategies in the financial market as shown by a mean score of 3.9195, financial liberalization as shown by a mean score of 3.8736, credit rating as shown by a mean score of 3.6667 and debt appetite as shown by a mean score of 3.5862. However, the respondents unanimously agreed on the effect of planning strategies in the financial market and equity/credit availability while they were not in consensus on the effect of debt appetite. The findings correlate with Tsatsaronis & Zhu (2013) statements that interest rates especially short term interest rates explain almost 10.8 per cent of the variation in house prices in the U.S. Makena (2012) also argued that the

influences of a shock to the economy can be amplified and also propagated through the initial changes in the value of collateral such as land.

4.3.5 Macroeconomic Determinants

The study further inquired on the extent that macroeconomic factors affect pricing of real estate among the low-income in Nairobi.

Table 4. 11: Extent that macroeconomic factor affects pricing of real estate among the Low-Income in Nairobi

Macroeconomic factors	Mean	Std. Deviation	Coefficient of variation
Gross Domestic Product (GDP) growth trend	3.9368	0.5603	0.1423
Bank lending rate	3.9678	0.7677	0.1935
Unemployment rate	3.8333	0.5698	0.1486
Average inflation	3.7126	0.5568	0.1500
Average	**3.8626**	**0.6137**	**0.1586**

The study found that the macroeconomic factors that affect pricing of real estate among the low-income in Nairobi to a great extent include bank lending rate as illustrated by a mean score of 3.9678.

Hoskins, Higgins & Cardew (2013) found that GDP growth, inflation and unemployment show significant relations with composite property returns.

Gross Domestic Product (GDP) growth trend as illustrated by a mean score of 3.9368, unemployment rate as illustrated by a mean score of 3.8333 and. Huczynski & Buchanan (2013) highlighted GDP as being the most important influence on return levels. Case, Goetzmann, & Rouwenhorst (2010) analyzed that real GDP contrary to nominal GDP allows to erase the inflation effect and to compare the measure over our time line consideration of five years.

The study also found that average inflation affects prices of real estate to a great extent as illustrated by a mean score of 3.7126. This is in line with Debelle (2013) who investigated the importance of inflation as a driver of housing prices. On average, across countries, inflation was found to account for more than half of the total variation in house prices. In the short run, the size of the impact is even larger. Debelle further alludes that its contribution nears 90% of the total price variation in the one-quarter horizon and drops to about two thirds over the one-year horizon.

This notwithstanding, there was general consensus among the respondents on the effect of Gross Domestic Product (GDP) growth trend, unemployment rate and average inflation on pricing of real estate among the low-income in Nairobi while their opinions were skewed on the effect of bank lending rate as shown by the Coefficient of variation.

4.3.6 Government Policies/Subsidies

The study explored the influence of government policies/subsidies on pricing of real estate among the low-income in Nairobi.

Table 4. 12: Extent that government policies/subsidies affect pricing of real estate among the Low-Income in Nairobi

Government policies/subsidies	Mean	Std. Deviation	Coefficient of variation
Governmental stimulus program	3.9080	0.7392	0.1891
Tax credits and deductions	3.9540	0.6953	0.1758
Government subsidies	4.0010	0.6715	0.1678
Land use planning system	3.7701	0.6663	0.1767
Zoning rules	3.7011	0.6291	0.1700
Building regulations	3.7931	0.7994	0.2107
Administrative procedures	3.9483	0.6651	0.1685
Financial Policies	3.9885	0.7050	0.1768
Average	**3.8830**	**0.6964**	**0.1794**

According majority of the respondents government policies/subsidies affect pricing of real estate among the low-income in Nairobi to a great extent mainly through government

subsidies as shown by a mean score of 4.0010, financial policies as shown by a mean score of 3.9885, tax credits and deductions as shown by a mean score of 3.9540, administrative procedures as shown by a mean score of 3.9483, governmental stimulus program as shown by a mean score of 3.9080, building regulations as shown by a mean score of 3.7931, land use planning system as shown by a mean score of 3.7701 and zoning rules as shown by a mean score of 3.7011. The findings are in line with Milligan et al. (2013) that planning system can be used to promote and procure affordable housing through a mix of regulations and incentives such as inclusionary zoning requirement to allocate affordable housing in some (or all) locations or developments. Forster-Kraus et al. (2009) also pointed out that where government incentives have been introduced with the intention of bridging this gap by providing financial hand-outs although arguably, this has indirectly contributed to even higher house prices and issues for social sustainability.

In addition, it emerged that the government subsidies and administrative procedures had a great effect on acquisition and ownership among the low-income in Nairobi as shown by the general consensus on these parameters while the respondents' opinions were divergent with regard to the effect of governmental stimulus program and building regulations.

The study finally sought to establish what should be done to improve real estate uptake in general and by the low income groups in particular. The respondents said that the housing sector needs fiscal and policy measures to ensure that price movements reflect the economic situation of the country; they also attested that Central Bank of Kenya (CBK) should manage interest rates to prevent manipulation by the banks and other lending institutions. The respondents also said that real estate developers should ensure a careful development of strategies to avoid speculation from the outset. Use of alternative technologies in Kenyan market to bring down the cost of housing and establishment of a well-developed financial sector, including a more integrated micro-credit sector to help expand access to an array of financial services (credit and insurance; saving facilities and payment instruments) to help finance small private firms at rates that do not cripple their operations.

4.4 Multivariate Tests

The study conducted various multivariate tests to come up with the model explaining the relationship between pricing of real estate among the low-income in Nairobi (dependent variable) and the critical factors affecting pricing (independent variables).

4.4.1 Factor Analysis

Factor analysis is a systematic, statistical procedure used to determine relationships amongst several variables. This procedure enables numerous correlated variables to be condensed into fewer dimensions known as factors. The purpose of factor analysis is to discover simple patterns in the pattern of relationships among variables (Anderson, 2013). In the context of this research, the variables are the degree of agreement with various specific perception statements while the factors are the general underlying constructs of the various critical factors affecting pricing. To do this, communalities of each component is analyzed. Higher communalities are desirable. If the communality for a variable is less than 50%, it is a candidate for exclusion from the analysis because the factor solution contains less than half of the variance in the original variable, and the explanatory power of that variable might be better represented by the individual variable. In its procedure, rotation is applied to identify meaningful factor names or descriptions.

Table 4. 13: A table showing the Communalities

	Initial	**Extraction**
Income level	1.000	.922
Household size	1.000	.844
Migration patterns	1.000	.884
Population growth	1.000	.905
Consumer tastes and preferences	1.000	.979
Cost of Materials	1.000	.859
Cost of land	1.000	.887
Cost of specialized and casual labour	1.000	.959
Indirect costs such as statutory and infrastructure charges	1.000	.829
Functional Designs	1.000	.878
Construction Methods	1.000	.858
Location/ Accessibility	1.000	.881
Type of property	1.000	.894

Construction quality	1.000	.940
Land developer companies	1.000	.903
Supply elasticity of housing units	1.000	.909
Return on Investment (ROI)	1.000	.910
Market Segmentation	1.000	.875
Buyer Power	1.000	.895
Expectation	1.000	.934
Equity/ Credit availability	1.000	.984
Credit rating	1.000	.947
Nominal interest rates (Long-term)	1.000	.919
Debt appetite	1.000	.918
Financial liberalization	1.000	.943
Planning strategies in the financial market	1.000	.888
Gross Domestic Product (GDP) growth trend	1.000	.881
Bank lending rate	1.000	.951
Unemployment rate	1.000	.866
Average inflation	1.000	.948
Governmental stimulus program	1.000	.898
Tax credits and deductions	1.000	.846
Government subsidies	1.000	.863
Land use planning system	1.000	.917
Zoning rules	1.000	.907
Building regulations	1.000	.934
Administrative procedures	1.000	.931
Financial Policies	1.000	.894

Extraction Method: Principal Component Analysis.

The table 4.14 helps to estimate the communalities for each variance. This is the proportion of variance that each item has in common with other factors. For example 'Equity/Credit availability' has 98.4% communality or shared relationship with other factors. This value has the greatest communality with others, while 'Indirect costs such as statutory and infrastructure charges' has the least communality with others of 82.9%. The table of Communalities for this analysis shows communalities for all variables above 0.50, so we would not exclude any variables on the basis of low communalities.

Table 4. 14: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.859	18.051	18.051	6.859	18.051	18.051
2	4.720	12.422	30.473	4.720	12.422	30.473
3	4.252	11.189	41.663	4.252	11.189	41.663
4	3.918	10.311	51.973	3.918	10.311	51.973
5	2.662	7.004	58.978	2.662	7.004	58.978
6	2.383	6.272	65.250	2.383	6.272	65.250
7	2.001	5.266	70.515	2.001	5.266	70.515
8	1.876	4.936	75.451	1.876	4.936	75.451
9	1.777	4.677	80.128	1.777	4.677	80.128
10	1.557	4.097	84.225	1.557	4.097	84.225
11	1.367	3.596	87.821	1.367	3.596	87.821
12	1.006	2.649	90.470	1.006	2.649	90.470
13	.701	1.845	92.315			
14	.668	1.757	94.072			
15	.573	1.507	95.579			

16	.476	1.253	96.831			
17	.370	.973	97.804			
18	.333	.876	98.680			
19	.298	.785	99.466			
20	.167	.440	99.906			
21	.036	.094	100.000			
22	4.033E-15	1.061E-14	100.000			
23	3.073E-15	8.086E-15	100.000			
24	2.726E-15	7.173E-15	100.000			
25	2.413E-15	6.349E-15	100.000			
26	1.839E-15	4.840E-15	100.000			
27	1.506E-15	3.963E-15	100.000			
28	7.985E-16	2.101E-15	100.000			
29	4.412E-16	1.161E-15	100.000			
30	2.265E-16	5.961E-16	100.000			
31	-1.244E-16	-3.275E-16	100.000			
32	-6.496E-16	-1.709E-15	100.000			
33	-7.918E-16	-2.084E-15	100.000			
34	-9.194E-16	-2.419E-15	100.000			
35	-1.304E-15	-3.432E-15	100.000			
36	-1.707E-15	-4.492E-15	100.000			
37	-2.760E-15	-7.262E-15	100.000			
38	-3.638E-15	-9.575E-15	100.000			

Extraction Method: Principal Component Analysis.

In the table 4.15, the Kaiser Normalization Criterion is used, which allows for the extraction of components that have an Eigen value greater than 1. The principal component analysis was

used and 12 factors were extracted. As the table above shows, these 12 factors explain 90.47% of the total variation. Factor 1 contributed the highest variation of 18.051%. The contributions decrease as one moves from one factor to the other up to factor 12. The factor with the largest Eigen value has the most variance and so on, down to factors with small or negative Eigen values that are usually omitted from solutions (Stapleton, 2011). From the analyst's perspective, only variables with Eigen values of 1.00 or higher are considered worth analyzing.

Factor 1

Household size

Migration patterns

Indirect costs such as statutory and

Functional Designs

Supply elasticity of housing units

Equity/ Credit availability

Planning strategies in the financial market

Government subsidies

Factor 2

Cost of Materials

Type of property

Return on Investment (ROI)

Credit rating

Nominal interest rates (Long-term)

Financial market

Building regulations

Factor 3

Construction Methods

Land developer companies

Gross Domestic Product (GDP) growth trend

Unemployment rate

Administrative procedures

Financial Policies

Factor 4

Population growth

Consumer tastes and preferences

Cost of land

Cost of specialized and casual labour

Governmental stimulus program

Factor 5

Construction quality

Land use planning system

Factor 6

Tax credits and deductions

Factor 7

Income level

Factor 8

Market Segmentation

Factor 9

Location/ Accessibility

Buyer Power

Factor 10

Debt appetite

Factor 11

Expectation

Zoning rules

Factor 12

Financial liberalization

Average inflation

Table 4. 15: Component Matrix

	Component											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Income level	.436	.020	.359	.079	.387	.084	.562	.125	.294	.128	.072	.034
Household size	.708	.180	.037	.212	.321	.102	.184	.164	.168	.711	.199	.103
Migration patterns	.884	.051	.101	.248	.451	.129	.247	.099	.093	.212	.166	.309
Population growth	.379	.223	.184	.478	.262	.151	.203	.382	.288	.123	.181	.201
Consumer tastes and preferences	.296	.065	.220	.728	.171	.110	.374	.092	.020	.338	.052	.032
Cost of Materials	.152	.445	.108	.451	.117	.056	.180	.386	.434	.148	.093	.079
Cost of land	.004	.386	.157	.494	.096	.399	.153	.277	.426	.140	.020	.003
Cost of specialized and casual labour	.049	.368	.223	.589	.217	.437	.192	.075	.116	.180	.251	.187
Indirect costs such as statutory and infrastructure charges	.574	.272	.335	.054	.239	.278	.087	.251	.106	.044	.269	.144
Functional Designs	.705	.108	.459	.212	.124	.036	.032	.199	.024	.125	.029	.196
Construction Methods	.400	.430	.593	.142	.173	.007	.155	.085	.258	.043	.080	.070
Location/ Accessibility	.579	.089	.082	.400	.029	.099	.349	.101	.730	.045	.374	.183
Type of property	.328	.598	.426	.316	.169	.082	.027	.130	.055	.082	.292	.011
Construction quality	.097	.285	.251	.199	.566	.607	.065	.061	.084	.100	.174	.050
Land developer companies	.286	.258	.508	.161	.342	.484	.004	.018	.187	.273	.019	.093
Supply elasticity of housing units	.559	.280	.087	.035	.225	.277	.300	.074	.188	.383	.261	.186
Return on Investment (ROI)	.398	.563	.119	.124	.180	.262	.314	.265	.297	.193	.098	.024
Market Segmentation	.391	.131	.256	.081	.123	.230	.053	.481	.276	.383	.302	.130
Buyer Power	.417	.249	.152	.273	.060	.197	.165	.176	.496	.424	.163	.091

Expectation	.349	.386	.023	.237	.387	.008	.477	.170	.280	.215	.716	.170
Equity/ Credit availability	.484	.117	.555	.103	.255	.124	.055	.409	.052	.095	.291	.266
Credit rating	.396	.619	.337	.352	.177	.188	.091	.081	.291	.006	.045	.019
Nominal interest rates (Long-term)	.339	.672	.003	.352	.172	.079	.061	.097	.122	.177	.142	.335
Debt appetite	.499	.260	.339	.050	.080	.226	.270	.033	.235	.695	.369	.351
Financial liberalization	.671	.065	.028	.341	.297	.112	.115	.291	.214	.338	.081	.694
Planning strategies in the financial market	.710	.354	.141	.181	.067	.220	.242	.143	.075	.257	.044	.038
Gross Domestic Product (GDP) growth trend	.302	.223	.516	.379	.177	.273	.131	.306	.205	.200	.167	.051
Bank lending rate	.437	.616	.009	.375	.030	.024	.070	.224	.185	.139	.170	.318
Unemployment rate	.180	.356	.634	.088	.331	.133	.213	.333	.062	.089	.010	.043
Average inflation	.042	.461	.545	.089	.008	.162	.027	.143	.082	.060	.329	.777
Governmental stimulus program	.188	.220	.308	.653	.389	.126	.078	.054	.199	.151	.207	.106
Tax credits and deductions	.219	.018	.064	.135	.509	.618	.081	.113	.142	.262	.154	.039
Government subsidies	.587	.016	.137	.168	.191	.446	.442	.124	.089	.046	.115	.027
Land use planning system	.240	.378	.110	.355	.503	.091	.275	.211	.013	.335	.102	.270
Zoning rules	.356	.650	.099	.175	.004	.234	.365	.241	.184	.193	.822	.017
Building regulations	.435	.435	.102	.479	.339	.058	.037	.221	.206	.174	.121	.245
Administrative procedures	.351	.350	.629	.128	.125	.221	.181	.244	.205	.010	.256	.088
Financial Policies	.422	.032	.567	.345	.136	.156	.178	.352	.082	.085	.149	.197

Extraction Method: Principal Component Analysis.

a. 12 components extracted.

The initial component matrix was rotated using Varimax (Variance Maximization) with Kaiser Normalization. The results allowed for the identification of which variables fall under each of the 12 major extracted factors. Each of the 38 variables was looked at and placed to one of the 12 factors depending on the percentage of variability; it explained the total variability of each factor. A variable is said to belong to a factor to which it explains more variation than any other factor. All items in the 12 factors identified had factor loadings above the *cut-off* value (*0.4*) impressing their importance and meaningfulness to the factors in the light of recommendations by Hair *et al* (1998). Each number represents the correlation between the item and the rotated factor. These correlations can help formulate an interpretation of the factors or components. This is done by looking for a common thread among the variables that have large loadings for a particular factor or component.

4.4.2 Pearson's Correlations Analysis

Pearson's correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed.

Table 4. 16: Correlations Matrix

		ownership of real estate among the Low-Income	Shifting Population	Construction	Structural	Financial	Macroeconomic	Government Policies/
Acquisition and ownership of real estate among the Low-Income	Pearson Correlation	1	.473	.914	.512	.831	.553	.324
	Sig. (2-tailed)		.040	.022	.009	.001	.043	.007
Shifting Population demography	Pearson Correlation	.473	1	.396	.526	.055	.284	.052
	Sig. (2-tailed)	.040		.000	.000	.473	.000	.495
Construction cost	Pearson Correlation	.914	.396	1	.484	.391	.097	.189
	Sig. (2-tailed)	.022	.000		.000	.000	.204	.012
Structural Characteristics	Pearson Correlation	.512	.526	.484	1	.066	.306	.451

	Sig. (2-tailed)	.009	.000	.000		.386	.000	.000
Financial market dynamics	Pearson Correlation	.831	.055	.391	.066	1	.023	.248
	Sig. (2-tailed)	.001	.473	.000	.386		.761	.001
Financial market dynamics	N	174	174	174	174	174	174	174
Macroeconomic determinants	Pearson Correlation	.553	.284	.097	.306	.023	1	.359
	Sig. (2-tailed)	.043	.000	.204	.000	.761		.000
Government Policies/Subsidies	Pearson Correlation	.324	.052	.189	.451	.248	.359	1
	Sig. (2-tailed)	.007	.495	.012	.000	.001	.000	

According to the table, there is a positive relationship between all the seven factors and pricing of real estate among the low-income earners. The positive relationship indicates that there is a correlation between the factors and the pricing of real estate among the low-income earners. Based on the correlation coefficients, construction cost has the highest effect on pricing of real estate among the low-income earners financial market dynamics then macroeconomic determinants, structural characteristics and shifting population demography while government policies/ subsidies had the least effect on pricing of real estate among the low-income earners.

4.4.3 Multi collinearity Test

Problem may arise when two or more predictor variables are correlated. Heteroscedasticity means that previous error terms are influencing other error terms and this violates the statistical assumption that the error terms have a constant variance. Greene (2003) argues that the prediction is not affected, but interpretation of, and conclusions based on, the size of the regression coefficients, their standard errors, or the associated z-tests, may be misleading because of the potentially confounding effects of multi collinearity. In the presence of multi collinearity, Mason and Perreault (2011) demonstrate that the coefficient estimates may change erratically in response to small changes in the model or the data. However, the decision to finally drop an item also depends on a second step, where the variance inflation factor (VIF) is applied according to Greene (2013) and Baum (2006). The VIF detects multi

collinearity by measuring the degree to which the variance has been inflated. A VIF greater than10 is thought to signal harmful multi collinearity as suggested by Baum (2006).

Table 4. 17: Summary of Collinearity Statistics

Model	Collinearity Statistics	
	Tolerance	VIF
Shifting Population demography	0.924	2.728
Construction cost	0.786	1.423
Structural Characteristics	0.634	1.352
Financial market dynamics	0.974	1.435
Macroeconomic determinants	0.770	1.628
Government Policies/Subsidies	0.865	0.975

The Variance inflation factor (VIF) was checked in all the analysis which is not a cause of concern according to Baum (2006) who indicated that a VIF greater than 10 is a cause of concern.

4.4.4 Regression Analysis

Table 4. 18: Goodness of fit of the model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.853[a]	0.728	0.716	.89980

a. Predictors: (Constant), Shifting Population demography, Construction cost, Structural Characteristics, Financial market dynamics, Macroeconomic determinants, Government Policies/Subsidies.

Table 4.19 is a model fit which establish how fit the model equation fits the data. The adjusted R^2 was used to establish the predictive power of the study model and it was found to be 0.716 implying that 71.6% of the variations in acquisition and ownership of real estate among the low-income earners in Nairobi are explained by shifting population demography, construction cost, structural characteristics, financial market dynamics, macroeconomic determinants and government policies/subsidies leaving 28.4% unexplained. Therefore, further studies should be done to establish the other factors (28.4%) affecting acquisition and ownership of real estate among the low-income earners in Nairobi.

Table 4. 19: Summary of One-Way ANOVA results of the regression analysis between acquisition and ownership of real estate among the low-income earners and predictor variables at 0.05 level of significance.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	172.152	7	24.593	63.392	.000[a]
	Residual	64.4	166	0.388		
	Total	236.552	173			

a. Predictors: (Constant), Shifting Population demography, Construction cost, Structural Characteristics, financial market dynamics, Macroeconomic determinants, Government Policies/Subsidies

b. Dependent Variable: Acquisition and ownership of real estate among the Low-Income earners in Nairobi

The probability value of 0.000 indicates that the regression relationship was highly significant in predicting how shifting population demography, construction cost, structural characteristics, financial market dynamics, macroeconomic determinants, government policies/subsidies influenced acquisition and ownership of real estate among the low-income earners in Nairobi. The F calculated at 5 percent level of significance was 63.392 since F calculated is greater than the F critical (value = 2.10), this shows that the overall model was significant.

Table 4. 20: Coefficients of regression equation

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.336	.800		1.670	.097
	Shifting Population demography	.338	.142	.205	2.378	.019
	Construction cost	.876	.115	.693	7.596	.000
	Structural Characteristics	.455	.187	.222	2.430	.016
	Financial market dynamics	.810	.116	.514	6.987	.000
	Macroeconomic determinants	.501	.113	.352	4.445	.000
	Government Policies/Subsidies	.258	.129	.159	2.007	.046

a. Dependent Variable: acquisition and ownership of real estate among the Low-Income in Nairobi

The established model for the study was:

$$Y = 1.336 + 0.338X_1 + 0.876X_2 + 0.455X_3 + 0.81X_4 + 0.501X_5 + 0.258X_6$$

The regression equation above has established that taking all the considered factors into account (shifting population demography, construction cost, structural characteristics, financial market dynamics, macroeconomic determinants and government policies/subsidies) constant at zero acquisition and ownership of real estate among the low-income earners in Nairobi will be 1.336. The findings presented also show that taking all other independent variables at zero, a unit increase in shifting population demography would lead to a 0.338 increase in acquisition and ownership of real estate among the low-income earners and a unit

increase in construction cost would lead to a 0.876 increase in the acquisition and ownership of real estate among the low-income earners.

Further, the findings shows that a unit increase in structural characteristics would lead to a 0.455 increase in acquisition and ownership of real estate among the low-income earners while a unit increase in financial market dynamics would lead to a 0.81 increase in acquisition and ownership of real estate among the low-income earners.

In addition, a unit increase in macroeconomic determinants would lead to a 0.501 increase in the acquisition and ownership of real estate among the low-income earners while a unit increase in government policies/subsidies would lead to a 0.258 increase in the acquisition and ownership of real estate among the low-income earners when the other factors are kept constant

In terms of magnitude, the findings indicated that construction cost had the highest influence on pricing of real estate, followed by financial market dynamics then macroeconomic determinants, structural characteristics, and shifting population demography in order of decreasing strength while government policies/subsidies had the least effect on acquisition and ownership of real estate among the low-income earners in Nairobi. All the variables were significant as their P-values were less than 0.05.

4.4.5 T-Test

Table 4. 21: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Population Demography	7	3.8751	.08381	.03168

Mean depression score (3.8751 ± 0.08381) was lower than the population 'normal' depression score of 7.0.

Table 4. 22: One-Sample Test

	Test Value = 7				
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference

					Lower	Upper
Population Demography	-98.645	6	.000	-3.12493	-3.2024	-3.0474

From the findings, $p < .05$ (it is $p = 0.000$). Therefore, it can be concluded that the population means are statistically significantly different therefore we reject the null hypothesis. It is therefore clear that at least one of the mean factors that influence the acquisition and ownership of real estate is higher or lower than the rest of the factors in Nairobi County.

CHAPTER FIVE

DISCUSSION OF THE STUDY'S FINDINGS

5.1 Introduction

This chapter presents the discussion of key data findings drawn from the findings highlighted relative to the literature reviewed. The discussions were focused on addressing the objectives of the study.

5.2 Summary of Findings and Discussions

The study found that the factors driving real estate pricing in Kenya include shifting population demography, construction cost, structural characteristics, financial market dynamics, macroeconomic determinants and also Government Policies/Subsidies.

The development and ownership of real estate in Kenya has been driven and affected by a wide range of factors that have defined its evolution over time, both at the pre- and post-independence periods. It was clear that the various aspects of shifting population demography affect acquisition and ownership among the low-income to a great extent such as population growth, income level, consumer tastes and preferences, household size and migration patterns. The study also revealed that the construction costs that affect pricing of real estate among the low-income in Nairobi to a great extent include cost of materials, cost of land, cost of specialized and casual labor and indirect costs such as statutory and infrastructure charges. The study also found that that the structural characteristics that had a great effect include location/ accessibility, construction methods, construction quality, functional designs and type of property while land developer companies had a moderate effect.

The financial market dynamics that affect pricing of real estate among the low-income in Nairobi to a great extent include supply elasticity of housing units, buyer power, return on investment (ROI) and expectation while market segmentation had a moderate effect on the pricing. The study further established that the aspects of financial market dynamics that affect pricing of real estate among the low-income in Nairobi to a great extent include nominal interest rates (long-term), equity/credit availability, planning strategies in the financial market, financial liberalization, credit rating and debt appetite.

The study also found that macroeconomic factors such as bank lending rate, gross domestic product (GDP) growth trend, unemployment rate and average inflation affect pricing of real estate among the low-income in Nairobi to a great extent. This study further established that government policies/subsidies affect pricing of real estate among the low-income in Nairobi to a great extent mainly through government subsidies, financial policies, tax credits and deductions, administrative procedures, governmental stimulus program, building regulations, land use planning system and zoning rules.

The study further found that 71.6% of the variations in acquisition and ownership of real estate among the low-income earners in Nairobi are explained by shifting population demography, construction cost, structural characteristics, financial market dynamics, macroeconomic determinants and government policies/subsidies. The findings indicated that construction cost had the highest influence on acquisition and ownership of real estate among the low-income earners in Nairobi, followed by financial market dynamics then macroeconomic determinants, structural characteristics, and shifting population demography in order of decreasing strength while government policies/subsidies had the least effect on acquisition and ownership of real estate among the low-income earners in Nairobi.

5.3 Areas for Further Research

The study recommends that to add weight to this study, another study should be done to investigate the factors affecting pricing of real estate among other income groups such as the middle and the high income earners to allow for comparison that would give a clearer picture. Further studies should be done on the effect of the strategic choices among the mortgage firms on the pricing of real estate among various groups.

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APPENDICES

Appendix I: Research Questionnaire

Please give your response(s) in the spaces provided and tick the space or box that matches your answer to the questions as best as possible where applicable.

PART A: BACKGROUND INFORMATION

1. What is your gender?

   [ ] Male [ ] Female

1. In which of the following age brackets do you belong?

   [ ] 2130 years [ ] 3140 years [ ] 4150 years [ ] Above 50 years

2. What is your education level (state the highest level?)

   [ ] Primary [ ] Secondary [ ] Diploma

   [ ] Undergraduate [ ] Post Graduate [ ] Other _____

3. How long have you been working in this Organisation?

   [ ] Less than 1 year [ ] 15 years

   [ ] 610 years [ ] More than 10 years

PART B: CRITICAL FACTORS AFFECTING PRICING OF REAL ESTATE

4. In your view, what has been the trend of acquisition and ownership of real estate among the Low-Income in Nairobi?

   Greatly Improved [ ]

   Improved [ ]

   Constant [ ]

   Decreasing [ ]

Greatly decreased [ ]

5. To what extent does real estate pricing affect acquisition and ownership among the Low-Income in Nairobi?

   Very great extent [ ]

   Great extent [ ]

   Moderate extent [ ]

   Little extent [ ]

   Not at all [ ]

6. To what extent do the following factors affect real estate pricing and subsequently acquisition and ownership among the Low-Income in Nairobi?

	Very great extent	**Great extent**	**Moderate extent**	**Little extent**	**Not at all**
Population demography					
Income level					
Household size					
Migration patterns					
Population growth					
Consumer tastes and preferences					
Others (please specify)…….					
Construction cost					
Cost of Materials					

Cost of land					
Cost of specialized and casual labour					
Indirect costs such as statutory and infrastructure charges					
Others (please specify)…….					
Structural Characteristics					
Functional Designs					
Construction Methods					
Location/ Accessibility					
Type of property					
Construction quality					
Land developer companies					
Others (please specify)…….					
Financial Market dynamics					
Supply elasticity of housing units					
Return on Investment (ROI)					
Market Segmentation					
Buyer Power					
Expectation					
Equity/ Credit availability					

Credit rating					
Nominal interest rates (Long-term)					
Debt appetite					
Financial liberalization					
Planning strategies in the financial market					
Others (please specify)…….					
Macroeconomic determinants					
Gross Domestic Product (GDP) growth trend					
Bank lending rate					
Unemployment rate					
Average inflation					
Others (please specify)…….					
Government Policies/Subsidies					
Governmental stimulus program					
Tax credits and deductions					
Government subsidies					
Land use planning system					
Zoning rules					
Building regulations					

Administrative procedures					
Financial Policies					
Others (please specify)…….					

7. What do you think should be done to improve real estate uptake in general and by the low income groups in particular?

.....
.....
.....
.....

Thank you for your cooperation