DEMOGRAPHICS, HOUSING SEARCH, ASYMETRIC INFORMATION AND HOUSING DECISIONS AMONGST APARTMENT HOUSEHOLDS IN NAIROBI COUNTY, KENYA

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DECLARATION

I declare that this PhD thesis is my original work and has not been submitted to any other academic institution for academic credit. I have also given appropriate credit to other sources used where it is due.

Signed--   Date--------------------

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In accordance with University of Nairobi policy, this thesis is accepted in partial fulfillment of the requirement of the award of a PhD. degree (Finance) in Business.

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DEDICATION

To my PhD supervisors (Dr. Josiah Aduda & Prof. Erasmus Kaijage),

To the Vice-Chancellor, Kenyatta University (Prof. Olive Mugenda),

To Dr. Ann Muchemi,

To my wife (Janet), my children (John & Martha) and my brother John,

and

To the old, focused and resilient boxer!

-For their kindness, motivation, invaluable support and for being a fountain of inspiration in my life.

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ABSTRACT

The specific objectives of the study were: to ascertain if demographics have a significant influence on housing decisions amongst households; to determine the mediating effect of housing search on the influence of demographics on housing decisions amongst households; to determine the moderating effect of asymmetric information on the influence of demographics on housing decisions amongst households and to determine if the joint influence of demographics, housing search and asymmetric information on housing decisions amongst households was greater than the influence of demographics (singly) on such decisions. Four hypotheses were formulated and each of them was operationalized into 4 sub-hypotheses. The study was anchored on rational choice theory, efficient markets theory and agency theory. Using cluster sampling, a sample of 226 households was contacted-199 responded. The study adopted the positivist research philosophy and a descriptive cross-sectional design. SPSS was used to analyze data using factor analysis, cross tabulation, multiple regression analysis (standard) and hierarchical regression analysis. Tests conducted include: Cronbach's Alpha (0.568), normality and linearity (using Shapiro-Wilk test and Q-Q plots), multicollinearity (using correlation matrices, Tolerance and VIF), homogeneity of variance (Levene test), sampling adequacy (KMO= 0.535), relationship between variables (Bartlett's test of Sphericity). Study found that demographics overall had a significant influence on choice of neighbourhood and choice of location of house; marital status was the sole factor with a significant influence on source of financing; housing search and asymmetric information had a mediating and moderating influence but their influence was not statistically significant; the joint influence of demographics, housing search and asymmetric information on the 4 housing decisions was greater than the influence of demographics (singly) on all the 4 housing decisions. The study concluded that: the housing market is efficient to the extent of the scope of this study or home buyers overly utilize informal means of housing search; the market is not experiencing significant asymmetric information problems; home buyers seem not to be utilizing market intermediaries to acquire market information. The study recommended that: relevant housing, infrastructure and development control departments at the National Government and County Government of Nairobi should develop relevant housing laws to maintain high quality residential neighbourhood; mortgage financiers to review their credit policy in view of buyer income and marital status; mortgage financiers to focus mortgage lending to the married; property developers to consider making convenient mortgage arrangements by partnering with key players. The study contributes to knowledge since finance theory stands to gain since the study explains how the study variables account for housing decisions; academicians will form a basis for future study out of the research gaps identified by this study; physical search was found to be popular. Limitations highlighted include: inability of descriptive cross-sectional design to capture time effect; inability to extend research outcome to other settings besides the study being restricted to only one county; having home owner as respondent for the household; lack of similar studies from other counties in Kenya. Further studies should consider longitudinal study of a similar nature; need for test of housing market efficiency; the need for a causal study on marital status and source of financing and an exploratory study on the factors accounting for source of financing; a study to investigate why the high mortgage uptake amongst the apartment households contrary to empirical evidence from the Kenyan housing market.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

A household's decision to buy a residential house is classified under personal finance (Kapoor *et al.,* 2007). Home ownership is the most important investment for any household and the same requires high involvement due to the heavy financial commitment and the risks involved (Koklic & Vida, 2011). A household is a group of people who slept in the same house last night and ate from the same cooking pot (SMART methodology, 2012). The fundamental question in residential real estate investment is what really explains home ownership investment decisions in the context of the process and the environment under which such decisions are made. Real estate markets gained increased attention following the subprime mortgage crisis of 2007-2008 which was instigated by asymmetric information problems by mortgage borrowers (who were mainly households), mortgage originators and inadequate search by mortgage buyers in the secondary mortgage market (Dowd, 2009; Kau *et al.,* 2010).

When households buy a home, their unique demographics, housing search behaviour and asymmetric information influence their housing decision choices. Demographics are the description of a population according to selected characteristics such as age, income, marital status and gender (Kerin *et al.,* 2009). Housing search constitutes the effort expended by a household in searching for appropriate housing and relevant information in housing markets and the costs incurred in searching for a home (Cronin, 1982). Asymmetric information is hidden knowledge and hidden action in market interactions leading to adverse selection problems and moral hazards (Kau *et al.,* 2010).

Wheaton (1990) indicates that household demographics are dynamic and change quite often. Changes in demographics do initiate household moves to new houses or settings (neighbourhood or location) in search for improved housing utility. Household demographics also influence housing search behaviour (effort and cost). When demographics change, housing search behaviour changes too; changes in housing search will ultimately influence the relationship between household demographics and housing

decision choices. However, asymmetric information has a moderating influence on the relationship between demographics and home ownership decisions.

There are three theories upon which the study is anchored. Rational choice theory posits that individual decisions are optimal if associated gains outweigh costs. Hence, considering that housing decision choices involving some kind of cost benefit analysis, households will consider a change in housing if gains from relocation outweigh associated costs and externalities. Information problems in market exchanges are often associated with efficient markets theory. Proponents of this theory indicate that housing markets are largely inefficient due to their illiquid, decentralized and heterogeneous structure. Different groups of home buyers have been found to have different levels of relevant market information (Garmaise & Moskowitz, 2004; Turnbull & Sirmans, 1993). Housing markets will always experience under supply of certain market information especially information relating to available amenities, infrastructure and housing market regulations (Stigliz, 1993). Hence, decision biases do influence buyer decisions with the home ownership market being no exception. Of equal importance is agency theory which posits that home buyers will opt to engage market agents/brokers in order to improve their housing utility and alleviate their information asymmetry challenges. However, the utility maximizing behaviour of real estate market agents and their conflicting interests eventually limit gains to such home buyers. Cronin (1982) proposes a search model which advocates for intensive search in real estate markets considering that much of the housing market transactions data is unavailable.

This study focuses on residential real estate market in Nairobi County, Kenya. This context is unique for various reasons: investing in a home is considered the most expensive investment for most households in Nairobi (Nabutola, 2004) hence the need to expend adequate time and resources in making housing related decisions; with increased cost of rental housing in Nairobi, most households are increasingly finding it needful to own a home instead of renting one. And real estate market participants like building construction firms, mortgage financiers, lawyers, architectures and surveyors have formed various partnerships to provide cost effective and convenient housing for dwellers in Nairobi. About 25% of Kenya's urban population live in Nairobi and this percentage is

bound to increase considering the high rate of rural-urban migration in Kenya (Rockefeller Foundation, 2005). Nairobi contributes about 50% of Kenya's GDP (Oundo, 2011; Nabutola, 2004; www.nairobimetro.go.ke). Nairobi is cosmopolitan and Kenya's metropolitan city and hence it is varied in demographic characteristics: this presents an appropriate setting for this kind of study. Most of the property developers in the country have concentrated their real estate development efforts to Nairobi County and more especially focusing more on apartments for residential housing as opposed to commercial housing.

1.1.1 Demographics

Residential housing decisions are mainly influenced by household demographic trends. Koklic and Vida (2001) note that the home buying process is influenced by demographics (also called demographic characteristics) such as lifestyle, characteristics of the buyer, size of the house, location, the fact that the house will be shared by others, needs and preferences of several individuals in the family among others. Similarly, Rashidi *et al.* (2012) do indicate that home ownership decisions are influenced by lifestyles, preferences, property value, utility and distance to work. In addition, Hood (1999) contends that marital status, education and presence of children have a strong influence on home ownership. Similarly, gender, marital status, occupation, educational level, income, household expenditure levels have also been cited as other demographics that influence home ownership investment decisions (Smith *et al.*, 1979; Koklic & Vida, 2001; Rashidi *et al.*, 2012). In the course of purchasing a residential home, all other factors held constant, high income persons will opt to buy a home in up class neigbourhoods; singles will often opt for small houses; the married will favour big houses just like households with many members; the old would prefer more serene neighbourhoods; those with high income levels may not opt for mortgage financing.

Wheaton (1990) indicates that household demographics change with time and such changes influence their housing decisions. For instance, changes in demographics such as income, family size as well as changes in ones job by a sufficient commuting distance will all compel households to move to a new residence. Similarly, when a single gets

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married, he/she may consider purchasing a bigger house; when one gets a substantially superior job, they may opt to move to a superior neighbourhood and location besides avoiding mortgage financing. When one changes professions or jobs, their preferred neighbourhoods may also change- this may instigate a move. High income persons are also likely to move to 'superior' neighbourhoods (Galvez & Kleit, 2011).

1.1.2 Housing Search

Housing search becomes an integral part of real estate investment decisions especially when housing markets are largely inefficient. Search is the effort and cost involved in improving buyer market outcome (Cronin, 1982). Ordinarily, property buyers may not always know much about the available amenities in the neighbourbood like schools, hospitals, clubs, shops and encumbrances that may affect title unless they traverse the area. Housing markets information inefficiency is attributed to the time devoted in searching and the cost of matching buyers and sellers (Fu & Ng*, 2001). Similarly, Carrillo (2012) concurs that the cost of searching in housing markets is significant and contributes to market inefficiency. Since housing is the most expensive and largest asset for most households, buyers have to search intensively for a house; the cost of searching is related to the source of information used, the mode of transportation used in searching and the time spent in searching (Cronin, 1982). Home buyers can conduct formal search by contacting market intermediaries or by reading newspaper advertisements; they can also use informal sources of search which include asking friends, reading housing vacancy signs and contacting family (Galvez & Kleit, 2011). Prospective home buyers would ordinarily search for information on housing legislation, infrastructure, security of the area, social and public utilities, sewerage system, transport network among others (Makachia, 2010; Oundo, 2011; Imwati, 2010).

Quigley and Weinberg (1977) contend that search influences household moves in housing markets. Rashidi *et al.* (2012) also indicate that residential search influences household location decisions. Similalry, Koklic and Vida (2001) note that information search shapes buyer decisions. Home buyers can search by physically visiting property sites, reading property magazines, journals and billboards; they can also opt to call

property agents for more information. Buyer search behaviour includes the number of neighbourhoods searched, number of dwelling units visited, number of dwelling units enquired about by phone and the average radius of search (Cronin, 1982). Home buyers also visit several locations in search for the most accessible housing given their budget constraint; they also enquire about safety of the apartment and the surrounding area. Buyers who opt for mortgage financing do visit several lenders in search for the cheapest mortgage.

1.1.3 Asymmetric Information

Asymmetric information is a major concern in markets with complex structures such as the housing market (Kau *et al.,* 2010). Clauretie and Sirmans (2006) contend that real estate markets will always experience under supply of certain relevant market information like the zoning laws, government regulations, infrastructural improvements, the available utilities and other key developments within the surrounding. The process of home ownership is equally confounded by asymmetric information: property sellers may withhold certain relevant negative information about the state of houses that are up for sale, the state of security in the area, hidden costs of closing the sale among others. In addition, sellers can unduly influence buyers to purchase property of their (sellers) choice. Turnbull and Sirmans (1993) note that home buyers enter the real estate market with certain biases on information and conditions that are set to prevail in housing markets: and this influences their decision choices. Certain relevant market information like the intermediation fees charged by property agents, stamp duty and valuation fees will not be easily available to property buyers unless a house has been sold. This information disadvantage on the part of property buyers may influence buyer investment decisions especially on the need for and choice of real property agents.

Suboptimal real estate investment decisions could be attributed to asymmetric information problems. These include: time constraint on the part of most home buyers, lack of adequate experience and history with the real estate market and inadequate knowledge of applicable government regulations. Hence, real property sellers and agents could easily mislead such buyers on neighbourhood characteristics like the rate of crime,

weather, sewerage system, available amenities and other infrastructure. Phipps (1988) indicates that heuristic rules govern decisions and that the decision to inquire and select homes during the search process is more predicted by heuristics than rationality. Northcraft and Neale (1987) confirmed such biases by finding that home buyers with limited market information used price anchors in making housing purchases in Arizona, US.

1.1.4 Housing Decisions

Considering that housing is expensive and the fact that a residential house is shared by several people, households have to make key residential housing decisions as they buy a residential home to optimize their housing utility. A household's home buying decisions are linked to search process, choice of location, neighbourhood characteristics, location of one's job, community ties, size of the house among others (Wong, 2002). The location of a house is a key decision that households must make; the performance of real estate markets is linked to location characteristics and the neighbourhoods (Maier & Herath, 2009; Oundo, 2011). Smith *et al.* (1979) attribute choice of neighbourhood to income and value of the house. Grether and Mieszkowski (1974) attribute real estate values to neighbourhood conditions, size of house, location of house, available land for parking, condition of house, pollution in the area, supply of amenities and utilities among others.

Key housing decisions have been attributed to several household characteristics and search behaviour. These include: age, size of household, income as well as accessibility to work, safety issues, effort expended in searching and cost incurred in searching. Phipps (1988) indicates that people's cognitive abilities for processing information are limited especially in complex environments and consequently, personal biases and cognitive biases influence much of individual investment decisions especially in asymmetric information environments. For purposes of this study, the key housing decisions made by households include: choice of residential neighbourhood, choice of location of house, source of financing and size of the house.

1.1.5 Real Estate Market in Nairobi County, Kenya

Nairobi County has an estimated population of 3,138,369 based on the census of year 2009 (Kenya National Bureau of Statistics Web). With more than three million households in need for housing in the county, the greatest challenge for property developers in the county remains addressing the shortfall in supply of residential housing of more than 150,000 units annually (www.ministryofhousing.go.ke). Private developers, suppliers of building materials, valuers and lawyers have often partnered with mortgage financers and other stakeholders to make it cheap and convenient for households to purchase residential homes in Nairobi. There is a Nairobi Kenya Home Expo exhibition that brings together the real estate market stakeholders twice a year. This exhibition has an objective of enhancing dissemination of relevant market information to enhance informed decision making amongst potential home buyers though information asymmetry still remains a challenge for most home buyers. In Nairobi, there is also an Architectural Association of Kenya (AAK) which incorporates architects, quantity surveyors, town planners, engineers, landscape architects, construction project managers and environmental design consultants to facilitate provision of decent, convenient and affordable housing to Kenyans (www.aak.or.ke). The housing market in Nairobi develops different types of apartments to accommodate the varying demographics of the county residents who aspire to own homes.

Nairobi County is unique considering that it contributes between 40 to 60% of Kenya's GDP (Nabutola, 2004; Oundo, 2011 & www.nairobimetro.go.ke). Within Nairobi City Council there is a City Planning and Architecture Department which is in charge of management and developments within the City of Nairobi (see Appendix VI). The Building and Survey Section reviews building plans to ensure compliance with building codes; the section also issues and supervises construction processes besides issuing building licenses (Oundo, 2011). Kenya's revised National Housing Policy of 2004 gave increased attention to Nairobi especially on addressing shortfalls in residential housing supply and slum upgrading initiatives by the Kenyan government. Beguy *et al.* (2010) note that Nairobi is a major labour market in Kenya hence increased need for residential

housing to accommodate the influx of labour market displacement of persons from other counties.

1.2 Research Problem

There is adequate housing market literature on household demographic characteristics, housing search, asymmetric information and real estate investment decisions (Cronin, 1982; Koklic & Vida, 2001; Rashidi *et al.,* 2012; Beguy e*t al.,* 2010; Dowd, 2009, Northcraft & Neale, 1987; Makachia, 2010; Wong, 2002; Imwati, 2010; Rossi, 1955). Other studies have extensively documented the extent to which real estate markets are efficient in terms of price cycles, semi-strong form and strong form efficiency (Clayton, 1998; Wang, 2004; Case & Schiller, 1990; Ball, 2006; Fu & Ng*, 2001). Though the cited literature dwells more on the processes and environment in which real estate investment decision are made, the literature is deficient to the extent that it does not clearly explain the relationships between the four study variables and the extent to which demographics, housing search and asymmetric information explain real estate investment decisions. Demographics explain much of a household's real estate investment decision choices though housing search behaviour and asymmetric information problems have been documented to have some influence on the demographics-real estate investment decision relationship.

However, Wheaton (1990) cautions that demographics are quite dynamic (since they change often) and that such dynamism influences housing search behaviour and a household's housing investment decision choices. As demographics and housing search influence housing investment decision choices, asymmetric information becomes an inevitable influence on this relationship since most housing markets have been found to be inefficient in disseminating relevant market information. Although the above literature has emphasized the importance of investigating household demographics, housing search and asymmetric information in real estate markets, much less attention has been accorded to the influence of these variables on housing investment decision choices (either singly or jointly) in an empirical context especially in Kenya.

Households in Nairobi County, Kenya make housing decisions in a market which is largely decentralized and varied in composition. Oundo (2011) indicates that Nairobi is unique due to its special problems of size and complexity caused by rapid spacial changes and several commercial centres. Imwati (2010) notes that Nairobi metropolitan is rapidly changing and is multi-ethnic; Nairobi is also faced with challenges of insecurity, spacial constraints, infrastructural challenges and social-economic development crises. With an estimated 30% of Kenya's population living in urban centres, Nairobi accounts for about 25% of the country's urban population (Rockefeller Foundation, 2005). Nairobi contributes about 50% of Kenya's GDP (Oundo, 2011); this could mean that the County is quite endowed in demographic characteristics such as income, wealth, occupation and household expenditure levels in comparison with other counties in Kenya. However, Makachia (2010) regrets that there are no known household mobility studies in contemporary Nairobi to corroborate studies from the West. These unique features necessitate an empirical investigation on how the study variables explain household decision choices in Nairobi County.

Empirical evidence on housing studies in foreign markets present several research gaps considering that the study variables are conceptualized differently and the study contexts vary significantly. Evidence on demographic characteristics from several housing markets dwells more on how demographics influence the likelihood of a household owning a home (Cronin, 1982; Case & Schiller, 1989; Hodd, 1999); studies on residential housing search are more focused on what kind of information home buyers search for and how buyers conduct housing search (Cronin, 1982; Wheaton, 1990; Fu & Ng*, 2001). Studies on asymmetric information focus more on how home buyers alleviate asymmetric information problems (Garmaise & Moskowitz, 2004; Turnbull & Sirmans, 1993) and the analysis of asymmetric information problems following the subprime mortgage crisis of 2007-2008 (Kau *et al.,* 2010; Dowd, 2009; Mishkin, 2008; Purnanandam, 2009; Ambrose *et al,* 2006). Besides the cited studies conceptualizing the study variables differently, their contexts are quite different from Nairobi County and hence, their empirical outcome cannot be extended to the housing market in Nairobi County, Kenya.

Evidence from the Nairobi County housing market has similarly documented conceptual differences. Imwati (2010) studied peri-urban settlement of Mlolongo Township in Nairobi and conceptualized household demographics as a factor affecting planning and formation of informal community settlements. Makachia (2010) investigated households in Kaloleni and Buruburu Estates in Nairobi and conceptualized demographics as a factor explaining household transformation: the study further focused on housing legislation, housing development laws and environmental conditions affecting quality of residential housing. Beguy *et al.* (2010) investigated factors influencing household migration rates among Korogocho and Viwandani slums in Nairobi and conceptualized demographics and infrastructure as key determinants of household migration rates. Oundo (2011) conceptualizes demographics as a factor contributing to changes in commercial urban forms of Nairobi besides investigating their influence on location and neighbourhood decisions. Unfortunately, there is scarcity of well known empirical studies on housing search behaviour and asymmetric information problems in the Kenyan housing market.

In view of the preceding paragraphs, several research gaps identified are noteworthy. Both foreign and local studies conceptualize the study variables differently. Only a few of the studies focus on how precisely these variables influence residential housing decision choices. The studies are largely inconclusive to the extent that they do not precisely identify which particular demographic characteristics have a statistically significant influence on real estate investment decisions; the studies lack a unified approach on how exactly demographic characteristics account for home ownership decisions amongst households and the influence of housing search and asymmetric information on this relationship. Instead, the studies dwell more on processes, housing market environment challenges and household reactions to housing market developments. The contextual differences between the foreign studies and the study context further presents research gaps since the outcome in foreign housing markets cannot be extended to the housing market in Nairobi County, Kenya. Hence, the broad question for this study was to investigate the influence of household demographic characteristics on real estate investment decisions amongst apartment households in Nairobi County, Kenya and the influence of housing search and asymmetric information on this relationship.

1.3 Research Objectives

The main objective of the study was to determine the influence of demographics on real estate investment decisions amongst apartment households in Nairobi County, Kenya.

The specific objectives of the study were:

i)   To establish if demographics have a significant influence on housing decisions amongst apartment households in Nairobi County, Kenya.

ii)   To determine the mediating effect of housing search on the influence of demographics on housing decisions amongst apartment households in Nairobi County, Kenya.

iii)   To determine the moderating effect of asymmetric information on the influence of demographics on housing decisions amongst apartment households in Nairobi County, Kenya.

iv)   To establish if the joint influence of demographics, housing search and asymmetric information on housing decisions amongst apartment households in Nairobi County, Kenya is greater than the influence of demographics on such decisions.

1.4 Value of the Study

The study adds value to finance theory, practice and policy in several ways. The outcome of the study contributes to finance theory by identifying which specific demographic characteristics account for each of the four decision types and the extent to which demographics account for housing decision choices. In addition, the study makes an academic contribution by documenting the extent to which housing search (mediating variable) and asymmetric information (moderating variable) influence the relationship between demographic characteristics and real estate investment decisions. Property developers stand to gain from the study by ascertaining which particular demographic characteristics explain choice of environmental, location of house, source of financing and size of apartment house decisions overall. Property developers are able to appreciate

the housing search behaviour of buyers and the influence of asymmetric information problems in the market so as to enhance their market outcome.

Mortgage financiers are bound to formulate mortgage policy in view of the determinants of source of financing as documented in the study. From the outcome of this study, the government departments in charge of lands, housing and infrastructure and the Nairobi County government department in charge of housing and development control are bound to benefit from the study by formulating zoning laws and housing regulations associated with residential neighbourhood and infrastructure surrounding residential settings.

1.5 Organization of the Study

The thesis is organized into six chapters as follows. Chapter one contains an introduction that places the study into its proper perspective by elucidating the conceptual, theoretical, contextual and empirical issues of relevance. The chapter presents the research problem which contains the issues warranting an investigation and knowledge gaps to be filled. Then the objectives of the study are captured and the value addition expected of the study. Chapter two presents a brief overview of the three theories which inform the study and a review of academic and empirical literature on the study variables from the housing market in Nairobi, Kenya as well as foreign real estate markets for apartments. The chapter also contains a conceptual framework that models the relationships between the study variables and the research hypotheses.

Chapter three presents the research methodology informing the study which include: research philosophy, research design, population and sampling, data collection method, data analysis and operationalization of study variables. Chapter four contains results of pretesting, cross tabulation of selected study variables and results of tests for reliability, normality, multicollinearity and homoscedasticity. The chapter also contains descriptive statistics for each of the four study variables (to identify the most important factor for each of the variables) and the outcome of factor analysis.

Chapter five contains results, findings and discussions on the four hypotheses which were tested using multiple regression analysis (standard) and hierarchical multiple regression analysis. Chapter six concludes the study by presenting the outcome of the study in terms of summary of study findings, conclusions, recommendations to policy and practice, limitations that the study encountered, areas that need to be researched further following the gaps that the study identified and contributions of the study to knowledge.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews academic and empirical literature on household demographic characteristics, housing search, asymmetric information and housing decision choices. In addition, a review of theoretical underpinning of the study is captured to expound on relevant theories that place the research into context. The chapter also reviews Kenya Government policy documents that focus on the housing market and housing infrastructure. A conceptual framework is captured with the conceptual model clearly showing the relationships among research variables. Finally, the chapter highlights the research hypotheses that tested the study relationships.

2.2 Theoretical Underpinning of the Study

2.2.1 Rational Choice Theory

William Stanley Jevons (the early neoclassical economist) made the initial contributions on Rational Choice Theory (RCT). The theory is also known as Choice Theory. Gary Baker was an early proponent of applying rational actor models (Backer, 1976). William Stanley contends that economic agents make consumption choices in such a way to maximize their happiness. The theory was developed from experimental collections of hypotheses emanating from empirical evidence from scientific investigations into the working of human nature. RCT is an economic based theory which indicates that people make investment choices upon taking into account costs and benefits associated with complex decisions. Investors seek to maximize their benefits while striving to minimize associated costs with a view of achieving the greatest satisfaction from the choices (Scott, 2008; Heath, 1976). The theory posits that man is a reasoning actor who weighs costs and benefits and makes well thought out choices. The standard RCT focuses on human decision making at the microeconomic level (Becker, 1976). The theory considers the decision maker to be rational and a utility maximize (Nau, 1999).

There are three key elements of the standard RCT. These include: the environment under which the decision maker operates which is considered key in determining their eventual decision choices; the behaviour of the individual person is fundamental considering their utility maximization behaviour and rationality which involves making a lot of critical thinking before making investment choices. In view of this study, considering that buying a house is expensive and housing markets are complex and varied in composition, the three elements become critical in influencing housing decisions. The modern RCT indicates that decision makers actually have a consistent ranking of choice alternatives (Becker, 1976). This is an indication that a pecking order of preference is generated on the basis of a cost-benefit analysis informed by an investor's rationality. Consequently, when households contemplate buying a home, they will often follow the process prescribed by standard RCT in coming up with a ranking of choice alternatives.

In view of this study, home buyers will consider moving away from their current homes and buying a house if the anticipated gains from such relocation will outweigh the costs of moving and associated externalities (Quigley & Weinberg, 1977; Hood, 1999). Similarly, potential home buyers will opt for mortgage financing if gains from owning a home are higher than the cost of obtaining mortgage loans and servicing the mortgage; home buyers may also consider relocation if a different size house is bound to give them improved utility.

2.2.2 Efficient Markets Theory

Efficient Markets Theory (also called efficient markets hypothesis) was developed by Eugene Fama in the 1960s following his published PhD work. Efficient markets theory dwells on asymmetric information problems in financial markets. The theory posits that efficient financial markets will instantaneously incorporate any new information (Fama, 1969). According to Radcliffe (1990), and efficient market is a market in which security prices fully reflect all known information. Hence, one cannot make above average profits/speculative profits consistently (if indeed the market was efficient) considering

that financial markets 'have no memory' and prices follow a 'random walk'- historical patterns will not be meaningful in explaining future behaviour of security prices. Therefore, financial market prices are fair and information arrives into the market in a random fashion giving none of the market participants any undue advantage; efficient markets are equally fair in transaction costs (Fama, 1969 & 1970).

Market efficiency is dynamic and can be viewed in different terms. Harry Roberts extended the contributions of Eugene Fama by contending that market efficiency is a dynamic state and that markets will often oscillate between three forms of efficiency: weak-form (where prices already reflect all past price and trading volume data), semi-strong form (prices already reflect all past price information, trading volume data and any publicly available information about the firm) and strong-form (where prices already reflect past price information, trading volume data and all public and private information about the firm). Market efficiency implies that at any given time, security prices will fully and rationally reflect all available information. Hence, any new information will quickly and rationally (in terms of size and direction) be incorporated in security prices. According to Fama (1970), efficiency could also mean that the market is operationally efficient (trading is carried out quickly, reliably and at a minimum cost) and allocationally efficient (resources being allocated to the most productive uses). To a great extent, a market with such features is largely theoretical since financial markets are dominated by asymmetric information and moral hazards.

The early tests of market efficiency were tests of the weak form efficiency (Bodie, 1989). Bachelier did the first known test of random walk hypothesis (about 1900) and found out that stock prices did not exhibit any patterns that one could exploit to make abnormal profits (they simply followed a 'random walk'); in 1953, Maurice Kendal's empirical investigation confirmed the that there were no predictable patterns in stock prices; Kendall and Roberts (1959) analyzed the possible existence of stock price patterns in vain; Fama (1965) analyzed "runs" of stock prices to find out whether stock markets exhibit "momentum" that could be exploited: he found out that such "runs" could not

generate abnormal profits. Levy (1971) made similar findings as Fama (1965). Hence, the early empirical investigations strongly indicated that these financial markets were largely efficient.

The efficient markets theory has attracted some controversies and criticisms considering the empirical contradictions that emerged in the 1970s and 1980s leading to stock market anomalies. Such anomalies have casted doubts on the prescriptions of the theory that financial markets are indeed efficient. Banz (1981) documents such anomalies to include: small-firm effect/size effect, January effect, Holiday effect and Weekend effect. In addition, the 1987 stock market crash raised several questions as to whether the financial markets are really efficient since the crash led to a loss of more than $500 billion in investors' wealth. The subprime mortgage crisis of 2007-2008 was another test on the validity of the prescriptions of the theory holding in the practical world. The crisis was instigated by asymmetric information problems in the market for securitization in the US. It is estimated that investors lost more than $200 billion following the mortgage market melt-down indicating that the housing market is indeed not efficient and that information asymmetry is a major concern for the real estate markets (An *et al.*, 2010; Dowd, 2009; Kau e*t al.,* 2010).

The efficient markets theory was initially proposed to explain information problems in security markets particulalry stock markets. However, subsequent literature has extended the prescriptions of the theory to the real estate market by viewing the efficiency of housing markets from different perspectives. These include: how fast new information is accessed by market participants and whether housing prices adequately capture the neighbourhood and property conditions (Ito & Hirono, 1993); whether households are occupying the right houses that is singles and unmarried occupying small houses while families occupy large houses (Wheaton, 1990); adequacy of supply of relevant market information on zoning laws and regulations, available public utilities and road improvements (Clauretie & Sirmans, 2006); whether out-of-state/out-of-town buyers pay more to transact in housing markets compared to their in-state/in-town counterparts (Turnbull & Sirmans, 1993; Lambson *et al.*, 2004); whether home buyers have adequate

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time to search for housing and whether the cost of matching buyers and sellers is fair and reasonable (Fu & Ng*, 2001); fairness and reasonableness of brokerage costs, search costs and transaction costs (Case & Schiller, 1989) and market prices reflecting all available market information, having a sufficient number of buyers and sellers, few barriers to entry, low information and search costs and having no abnormal returns (Gau, 1987).

In the context of this study, the contents of the preceding paragraph apply in several ways. Households intending to buy an apartment may not access all relevant market information from property sellers and agents, mortgage financiers, market intermediaries and government agencies. In particular, real property sellers would not voluntarily disclose negative information about the property that is available for sale since they could suffer competitive disadvantage; property agents may not disclose to buyers all the hidden transaction costs since the buyers may avoid them for fear of paying more; mortgage lenders may not disclose all hidden costs of borrowing; property sellers and agents would not disclose all defects about a house that is up for sale among other things. Consequently, asymmetric information is an inevitable problem on the part of home buyers and housing search becomes an integral part of the home buying process.

2.2.3 Agency Theory

Stephen Ross is the founder of the economic theory of agency while Barry Mitnick is credited for institutional theory of agency (Mitnick, 2006). However, the widely cited classical paper by Jensen and Meckling (1976) proposed agency theory of the firm. Watts and Zimmerman (1983) made further contributions on agency theory in the area of accounting and auditing. Jensen and Meckling (1976) articulate the theory by contending that due to the separation gap between the principal and the agent, the principal ends up having an informational disadvantage which leads to asymmetric information. With both parties being utility maximizers, agency problems arise since the agent pursues divergent interests (their own personal interests) which contradict the wishes and desires of the principal. Adverse selection problems will eventually arise since the principal cannot

determine whether the agent has the capacity to actually carry out the work they are being engaged to do.

The Agency theory is focused on short-term contractual relationships and how best to organize relationships between the principle and the agent. Agency theory posits that the divergent interests and utility maximizing behaviour of market agents leads to moral hazards and consequent suboptimal decisions on the part of the principle (Jensen & Meckling, 1976). Agents are common in markets confounded with informational problems. In housing markets, home buyers often have an information disadvantage compared to sellers (Clauretie & Sirmans, 2006; Lambson *et al.,* 2002). Hence, buyers are compelled to engage better informed market intermediaries like property agents/brokers, lawyers among others. The theory indicates further that the principal (the home buyer in this case) cannot determine whether the agent (market intermediary) has the capacity to actually carry out the work they are being engaged to do: adverse selection problems will eventually arise. In the context of buying a home, real property buyers may not tell with certainty whether property agents and other intermediaries will fully represent their (home buyers) interests in housing markets.

In real estate markets, property buyers may opt to engage agents to breach their information gap. However, the agents may pursue their personal desires which may be contrary to the wishes and desires of the principal (the property buyers). Suboptimal performance could be evident on the part of property valuers, lawyers and information agents. In view of conflicting interests, a property owner may hire a property manager but the owner may be dissatisfied with the manager if he pursues personal interests contrary to their desires; in a lease agreement, the owner of the building (lessor) may be dissatisfied with the performance of the lessee if the latter uses the building in a manner that is inappropriate or contrary to the original agreement (Clauretie & Sirmans, 2006). Mortgage lenders may also be dissatisfied with borrowers if the latter engages in certain prohibited activities that eventually jeopardize loan repayments- moral hazards. A moral

hazard is a situation where one party is responsible for the interests of another but has the incentive to put their own interests first hence creating agency problems (Dowd, 2009).

2.3 Real Property and Features of Real Property

Real property (also called real estate) consists of land and all property that is permanently attached to it including all the immovable such as buildings, houses, homes, fences and trees. It also includes forestry, agricultural, commercial, residential and industrial, and special purpose properties. Real property is also viewed as any piece of land including the air above it and the ground below it and any other structures on it (Bayer, 2003; Aigula, 2003; Brueggeman & Fischer, 2008). Thomcraft (2004) indicates that personal property is different from real property. He contends that personal property is also called personality and it includes all that a person owns in his private capacity including that which is movable but not connected to land in any way. This includes clothing, jewellery, motor vehicles among other personal property. The Kenya Constitution (2010) defines property as any vested or contingent right to or interest in or arising from land, or permanent fixtures on, or improvements to land.

Keown (2010) classifies real estate investments into two categories: direct or indirect investments. The former involves an actual ownership of real property while the latter is the investment in real estate by buying shares in firms that invest in real estate through investment syndicates in the form of Real Estate Investment Trusts (REITS). The ownership of real estate/property is associated with having a good title. The concept of title is frequently used to link an individual or entity who owns property to the property itself. When a person has 'title', he is said to have all the elements, including documents, records, and acts, that prove ownership. An interest in real estate is created by the owner and conveyed to another party, usually in exchange for other consideration (Kapoor *et al.* 2007).

Doling (2008) indicates that moves out of a home are explained by housing and housing market attributes like environmental/neighbourhood conditions and market regulations. Mulder (2007) explains that the housing market differs from other markets since

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production of housing is slow and subject to many laws and regulations; housing is also expensive and market intermediaries like landlords, developers and financial institutions play a key role in housing markets.

2.4 Kenyan Housing Market and Government Policy on Residential Housing

Kenya has a large housing gap which is increasing steadily especially in urban areas. The country has an estimated annual need of about 206,000 housing units (with about 40% of the needs being in urban areas that is 82,000 units) but the annual supply of housing is estimated to be about 50,000 units. Hence, Kenya has an annual housing deficit estimated at about 156,000 units (World Bank, 2011). The Kenyan housing market is characterized by large demand and a huge undersupply of formal housing (Arvanitis, 2013). Nabutola (2004) indicates that about 60% of the Nairobi residents live in informal settlements or slums (a population of about 3,000,000). A study by World Bank (2011) found that about 70% of the houses in Nairobi were permanent and only 11% of urban population could actually afford mortgage financing. Low mortgage penetration rates were also cited in Zambia where property developers faced a low sale-to-rental ratio on the properties they had built due to high interest rates and low mortgage uptake making most of the households prefer rental housing to buying houses (Arvanitis, 2013).

The Finscope Survey of 2009 found that only 1.5% of home owners acquired their homes through formal or other credit with the rest of the home owners buying the same using cash or/and informal financing means (World Bank, 2011). Arvanis (2013) indicates that there is a very low mortgage penetration rate in Kenya that is 2.5% of outstanding mortgages to GDP. The Central Bank of Kenya Survey of 2010 found that banks themselves identified access to long-term finance as the greatest challenge to the growth of their mortgage portfolios. According to Central Bank of Kenya, by year 2012, the average mortgage across Kenya was 6.6 million shillings requiring a repayment of 90,000 shillings per month over 20 years. This is by all means way above the means of majority of Kenyans (Arvanitis, 2013). In year 2012, property developers took about 73 days to register property while the cost of registering property as a percentage of the property

value was 4.3%; it took the property developers a total of 9 procedures to register property (World Bank, 2011).

Nabutola (2014) investigated policy on informal settlements and housing challenges and recommends an improvement of infrastructure, the need to make the neighbourhoods safer and more conducive to live and the essence for the Kenya government to come up with Housing Act to address homelessness. Arvanitis (2013) indicates that in year 2003, the Kenyan Government and UN- HABITAT entered into a memorandum of understanding to upgrade slums and informal settlements starting with selected areas in Nairobi. The Kenya informal settlement improvement project was initiated and spearheaded by the World Bank and the programme aimed at improving conditions of informal settlement.

The first attempt on a Kenya National Housing Policy was first captured in Sessional paper No. 5 of 1966/1967. After a couple of decades, a new policy was put in place that is the Kenya National Housing Policy of 2004. The policy addressed the deteriorating housing conditions in the country and how to bridge the shortfall in housing especially in urban areas (Nabutola, 2004). According to World Bank (2011), the year 2004 housing policy aimed at addressing the deficit in housing supply and containing the deteriorating housing conditions countrywide; the policy also documents how to address the housing shortfall in urban areas associated with demand exceeding supply of housing units. Some of the objectives of the housing policy include: to facilitate eventual right to adequate housing for every Kenyan, development and ownership of housing that is environmentally friendly and ideal, identify land and develop public housing in urban areas, increase the proportion of the exchequer allocation for housing, to provide improved infrastructural facilities and living environment, to protect the environment of human settlement among others (National Housing Policy for Kenya, 2004).

The problem of housing deficit has also been attributed to several factors which include rapid urbanization (especially in relation to search for employment), inaccessibility to housing finance, stringent planning regulations, restrictive building standards, high cost of infrastructure, poor economic performance among others (National Housing Policy for Kenya, 2004). The policy also recognizes the need to harmonize existing laws governing urban development besides creating a Housing Development Fund. Urban areas are also affected by acute shortage of habitable dwellings, inadequate infrastructure and congestions. With mortgage financing being elusive to many (due to its high cost), the government of Kenya has provided incentives to promote real estate investment which include: full interest deductibility of mortgage loans and low-cost housing developers in all regions being given 100% investment deduction (National Housing Policy for Kenya, 2004).

In the Kenya Vision 2030, housing and urbanization are addressed under Section 4.8 that is the Social pillar. Kenya Vision 2030 intends to provide the country's population with adequate and decent housing in a sustainable environment. The social pillar seeks to create a clean and secure environment, enhanced access to adequate finances to developers as well as home buyers. On matters security, Kenya Vision 2030 recognizes the need to provide Kenyans with more secure living environment. Consequently, Vision 2030 initiated a nationwide urban planning and development strategies. In addition, as part of the Economic Recovery Strategy, there is an aim of expanding and having well maintained national road network and improved safety of urban settings: the introduction of community-based policing was one such key measure to address security issues linked to theft, robbery, petty offences and drug problems in urban centres. All these issues have a bearing on the residential neighbourhood, location of residential housing and the general quality of housing. Socio-economic development of Kenya has been curtailed by overcrowding, poor and inadequate sanitation, pollution in urban slums and unplanned informal settlements. (Kenya Vision 2030, 2007).

The Rockefeller Foundation (2005) acknowledges that Kenya has experienced rapid urban population growth due to rural-urban migration with about 30% of the nation's population thought to be living in urban areas as of year 2004. Nairobi, the capital city of Kenya, accounts for about 25% of the country's urban population with more than half of the population living in informal settlements. Constraints to housing in Nairobi are attributed to: affordability, land, building codes and approvals, low levels of housing finance (only 6% of total loans to private sector was lent to the real estate sector) and government initiatives through institutions like Housing Finance, National Housing Corporation, challenges associated with slum upgrading programmes among others. To address the problem of low mortgage penetration rates in Kenya, the Jamii Bora Trust low-cost housing scheme was initiated. The trust developed a low-cost housing programme worth 600 Million Kenya shillings for the construction of about 2,000 housing units in Kajiado District with the project targeting those living in Nairobi Slums. To finance this project, funds were expected from member savings and donations from well wishers. Members would then receive loans from the Trust and would be expected to make monthly repayments of sh. 3,000. These mortgages would attract interest rates ranging between 8.5%-10% over a repayment period of 10-15 years (Rockefeller Foundation, 2005).

Land is an integral part of real estate. The land question in Kenya has received increased attention following rapid population growth, rapid urbanization, lack of clearly defined property rights and difficulties in accessing land, inadequate environmental management systems among others. The Kenya National Land Policy (2009) alludes to the fact that Kenya does not have a clearly defined National Land Policy due to the existence of several land laws some of which are contradictory and incompatible. The objective of the year 2009 Kenya National Land Policy was to institute a framework of policies and laws to enhance the maintenance of a system of land administration and management that will provide all citizens with an opportunity to access and beneficially occupy and use land and the efficient and effective utilization of land and land based resources.

The Kenya Constitution (2010) makes a provision for the creation of the National Land Commission to deal with wide ranging land issues in Kenya. The land control board is expected to provide all the relevant information about caveats, defects associated with legal title of land and all other information that would influence the judgment of a reasonable real estate investor. When the real estate market lacks such essential information, asymmetric information problems often arise. Powers of compulsory acquisition of land are mainly vested with the National Land Commission. This is corroborated by Section 5 Chapter 66 of the Kenya Constitution (2010) which indicates that the state may regulate the use of any land, or any interest in or right over any land, in the interest of defence, public safety, public order, public morality, public health, or land use planning. Development control is the power of the state to regulate property rights in urban and rural land. Development control further focuses on the use of land and to ensure its sustainability (National Land Policy, 2009).

2.5 Household Demographics and Relocation of Households

The following household demographics have been widely documented as having an influence on home ownership decisions: gender, marital status, size of household, occupation, level of education, income, lifestyle, wealth, income, personal characteristics, age, size of family, community ties, location of one's job, the fact that the house will be shared by other people, presence of children among other factors (Wong, 2002; Smith *et al.*, 1979; Makachia, 2010; Galvez & Kleit, 2011; Rashidi *et al.* (2012); Koklic & Vida, 2001; Hodd, 1999). In addition, Beguy *et al.* (2010) indicate that changes in family, changes in socioeconomic status and search for actual employment are some of the key factors that explain household mobility rates especially among low income households like slum dwellers. Imwati (2010) contends that informal settlements vary in demographic characteristics, size, social and ethnic composition and that income actually determines ones settlement. According to Mundra and Oyelere (2013), securing mortgage financing depends on the borrower's personal characteristics, their wealth and their networks.

Changes in household demographics are bound to initiate housing moves in order to improve housing utility. For instance, the higher the mover's income, the more likely they are to move to a 'superior' neighbourhood. When singles get married, they may desire bigger houses; when one moves to a better job, their improved income may make them initiate moves to 'superior' neighbourhoods (Wheaton, 1990; Galvez & Kleit, 2011). However, housing market inefficiencies may not often make households to occupying the appropriate kind of housing though Quigley and Weinberg (1977) indicate that housing moves are caused by dissatisfaction in the quality of housing. Wheaton (1990) cautions that housing moves are often associated with negative externalities and that singles may end up occupying large houses while families may end up in small houses. This is considered a mismatch and a manifestation of property market inefficiencies.

Household relocation has often been associated with demographics. The classical housing search study by Rossi (1955) found that families with more persons were often bound to relocate than the ones with one person. As household size increased, so did mobility while the presence of school going children in a family restricted mobility; the more educated persons were associated with increased mobility while the occupation of the household head was a poor predictor of relocation. The Rossi 1955 study also found that change of employment status seemed to affect mobility and those households who expected to move frequently opted for rental housing as opposed to buying a home. Quigley and Weinberg (1977) found that those households who initiated moves in the US did not settle far away from their previous homes. Wong (2002), citing Littlewood and Munro (1997), invokes mobility theory which warns that high costs of moving tend to impede residential mobility.

A household's home buying decisions are linked to search process, choice of location, type of housing, neighbourhood characteristics, location of one's job, community ties, transaction, information and upheaval costs, size of the house and price of housing. Some households may still opt not to move despite the need to do so and hence remain in a state

of disequilibrium (Wong, 2002). According Maier and Herath (2009), the location of a house is a key decision that households must make. Smith *et al.* (1979) attribute choice of neighbourhood to income and value of the house. Phipps (1988) contends that households move in order to adjust its housing stress and they are indeed faced by a budget constraint that ultimately influences their housing location, source of financing and choice of neighbourhood. Smith *et al*. (1979) attribute housing moves to elements of neighbourhood, changes in household life cycle and economic constraints. Galvez and Kleit (2011) contend that households move in an attempt to improve quality of life and that housing decisions are explained by safety considerations and access to work.

Shifts in household characteristics explain why households make certain real estate investment decisions. Wheaton (1990) contends that households move either when their job changes with a sufficient commuting distance or when they experience shifts in demographics like changes in income, family members among others. Households periodically 'change' and make deliberate moves away from the house that does not suite their needs. This can be easily contested on the grounds that though the head of a household can change jobs to a faraway place, then the households must not necessarily move closer to his/her new job especially when they happen to have already purchased a house before the new job was taken up. Shifts in income must not cause a move since the home owner may opt to divert the additional income into some other investment or other expenditure. When households give birth to more children, a bigger house maybe desired. But if their disposable income does not increase, they may still remain mismatched by maintaining the same small house. Hence, shifts in demographics may not always trigger moves instantly.

2.6 Real Estate Information and Housing Search
Turnbull and Sirmans (1993) indicate that different groups of homebuyers have varying levels of information about the real property market as well as different search costs. Home buyers often search for certain key information relating to neighbourhood conditions (like rate of crime, weather and pollution), ownership rights, zoning and

development control laws, cost of mortgage financing, infrastructure (especially state of road network), public and social utilities, ease of commuting to work, physical space, location of the house, age of building, floor and parking space (Makachia, 2010; Imwati, 2010; Ito & Hirono, 1993; Clauretie & Sirmans, 1996).

Watkins (1998) contends that information is crucial in the operation of property markets and that households are poorly informed about prevailing housing market conditions. Maier and Herath (2009) indicate that the heterogeneous nature of the housing market, the illiquid nature of housing as a product and the existence of property price cycles combine to contribute to information problems in the housing market and housing market inefficiency. Similarly, Koklic and Vida (2001) note that due to the nature of real property as a product and the home buying process is rather complicated and requires high involvement from the buyer. Lofgren *et al.* (2002) note that that those who live near a property will always have an information advantage over those who reside far away. Those residing within the neighbourhood often gain relevant market information in the process of reading the local papers, watching local news, shopping, sending children to school, driving around unlike those living far away who are often limited by time.

Housing search is aided by the presence of market intermediaries like financial institutions, surveyors and property agent (Watkins, 1998). Most home buyers are often busy and lack adequate time for search. Since housing is expensive and heterogeneous, Cronin (1982) advocates for intensive search in housing markets to alleviate information challenges. Information inefficiency in real estate markets is linked to search time and cost of matching buyers and sellers (Fu & Ng*, 2001). In order to gain information advantage, the housing market economic agents engage services of market intermediaries who include: bankers/mortgage brokers, insurance agents, conveyance lawyers, property managers among others. Home buyers can opt for formal or informal sources of searching for relevant information. Formal search would involve reading newspaper advertisements or using market intermediaries while informal sources of information may

include asking friends, workmates, reading housing vacancy signs and contacting family (Galvez & Kleit, 2011).

A households relocation costs include costs of moving possession and the out-of-pocket costs particular to each type of tenure like psychic costs. Housing market agents act as market makers though they eventually introduce transaction costs (Rossi, 1955; Watkins, 1998). Such transaction costs and other characteristics of the market affect search behavior. Both buyers and sellers incur expensive costs during the search process of buying or selling a home. Search cost (which includes time, transportation and emotional costs) is significantly large in real estate markets and contributes much to market inefficiency. Homebuyers in Virginia US spent $506 each time they visited and considered buying a house compared to $1,700 that home buyers spent in Tokyo (Carrillo, 2012). The cost of searching is mainly attributed to the source of information used, the mode of transportation used in the course of searching, the opportunity cost of time devoted in searching and transportation costs (Cronin, 1982; Smith *et al.,* 1979).

Market search is important though some empirical evidence has suggests that some home buyers do not often search extensively. The Lambson *et al.* (2004) makes various propositions on information in housing markets. They contend that those who reside within the same region where the real property is located will have access to more relevant information than their out-of-state counterparts since they can easily access such information while going to work, when taking their children to school, proximity of their residential homes to the real property at state, knowledge of market conditions when going shopping or information from the local newspapers. Such information is only accessed by out-of-state buyers by paying for the same or by contracting brokers (this may not be so helpful since most brokers serve the interests of their principals who are the sellers). However, Cronin (1982) cites several studies that recorded very low levels of housing search: Rossi (1955) found that 48% of renters and 33% of home owners had examined only one housing unit; the Brown and Holmes (1971) study found 44% of home owners had examined only one unit while 88% percent searched four units or less;

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the Barrett (1973) study found that 42% examined four units or less and still found that 48% of households searched for less than a month.

2.7 Asymmetric Information and Decision Biases in Real Estate Markets

Aldea and Marin (2007) indicate that asymmetric information is a situation where one party to a transaction has more or better information that the other party. Asymmetric information is associated with hidden knowledge/information and hidden action. The former occurs when one party on one side of the market know things that parties on the other side of the market do not know. Hidden action arises when one of the parties in a market acts in a way that is not observed by the other (Kau *et al.*, 2010). Lofgren *et al.* (2002) concur by contending that asymmetric information is a common feature of market interactions whereby the seller of a good has more knowledge about its quality than the prospective buyer.

Asymmetric information in residential housing markets emanates from households being poorly informed about prevailing market conditions and different groups of homebuyers having different levels of information. Property sellers have better knowledge on the state of the house and the neighbourhood characteristics compared to most home buyers who live far away (Lambson *et al.,* 2004). Northcraft and Neale (1987) contend that decision biases influence prices for buyers who have a previous experience with real property markets and those who have arbitrary reference points for property prices (price anchors). Personal and cognitive biases influence decision choices and that people are limited in terms of cognitive abilities for processing information and for making judgment in complex environment (Phipps, 1988). Simonsohn and Loewenstein (2002) address the problem of anchoring and real estate by concluding that buyers who are accustomed to high prices buy larger or more expensive homes than buyers accustomed to lower prices.

Chiappori *et al.* (2006) caution that information asymmetry is prevalent in all markets and that regardless of the product or service being traded and that sellers do not know much about buyer preferences nor their maximum price they are willing to part with.

Hence, anchoring-induced bias and Search costs have had a significant impact in real estate markets. The modern theory of markets, in situations of asymmetric information, is founded on the contributions of George Akerlof, Michael Spence and John Stigliz (Aldea & Marin, 2007). Akerlof demonstrated how the presence of information asymmetry can induce adverse selection in the market; *S*pence concludes that informed agents can actively signal their private information to uninformed agents for the former to gain a higher return from the contract; Stigliz explains how the less informed agents can offer a menu of contracts to 'direct' the more informed counterparties to the contracts that best fits their risk profile.

Clauretie and Sirmans (2006) indicate that unlike other markets, there is limited empirical evidence to support real estate market efficiency and that real property markets will always experience undersupply of certain relevant information like proposed zoning laws and regulations, road improvements, availability of public utilities and other nearby developments. This probably explains why real estate investors engage in extensive search and effort to overcome the market inefficiency challenges. Germaise and Moskowitz (2004) contend that uninformed agents will not consider trading with informed agents once they become aware of the information disadvantage. They further note that market participants endeavor to solve the information asymmetry problems by purchasing properties which are within their locality as compared to those far away from where they reside. But engaging brokers and agents can overcome information problems by buyers from faraway. They will also favour buying properties with long income history and they would also consider avoiding trades with professional brokers who are known to be better informed than them.

2.8 Moral Hazards, Adverse Selection and the Subprime Mortgage Market Crisis

Jensen (1993) indicates that asymmetric information eventually leads to moral hazards and adverse selection. Adverse selection (especially in the mortgage market) is the tendency for the most risky customers to be the most likely beneficiaries of mortgage

products (Dowd, 2009). Moral hazard is a situation where a person has no incentive to act honestly or with due prudence (Jensen, 1993). Arrow (1985) defines moral hazards as "hidden action" by an agent. It is the loss suffered by one party in a contract due to lack of probable honesty or prudence from the other party (Aldea & Marin, 2007).

Dowd (2009) contends that moral hazards played a critical role in the events leading to the subprime mortgage crisis. In the Subprime mortgage market securitization fiasco of 2007-2008 (international financial crisis), the loan originators did not have the incentive to properly screen the mortgage borrowers. Hence, there were massive loan defaults due to moral hazards (Purnanandam, 2009). When the securitized Commercial Mortgage Backed Securities (CMBS) were abused in the US; investors from other nations were also affected since they had invested in these securities. Kroon (2008) confirms that stock returns of Dutch firms were affected by the US subprime mortgage crisis. In particular, mortgage brokers would originate subprime mortgages for even the least creditworthy borrowers who were incorporated into securitization deals through a lax screening process and then 'quickly' sold off to unsuspecting CMBS investors. The latter were attracted by the high initial yields. The conduit lending would prosper as long as house prices kept rising and new entrants continued joining the market; once the interest rates started rising (they actually rose from 1% to slightly over 5%) and house prices started to fall, then the crisis emerged (Dowd, 2009).

The subprime mortgage crisis was a market failure that was instigated by asymmetric information problems. As of the first quarter of year 2008, 18.7% of the subprime mortgage loans were delinquent. This problem was also attributed to the deregulation of the lending markets. The originators in the subprime market grew from $65 billion in 1995 to $332 billion in year 2003. During this period, there was an aggressive expansion of Fannie Mae and Freddie Mac into subprime lending and by October 2008, 293 lenders had either gone bankrupt, halted their initiatives or were bought by larger firms (Zywicki & Adamson, 2009). Most of these loans were 'predatory' in the sense that they were given on the basis of security and not the borrowers' repayment ability. The loan

originators mostly targeted the young, low-income and minority borrowers. Consequently, there were major regulatory reforms to follow: in January 2008, the Fed issued proposed amendments on the Home Mortgage provisions of Regulations that saw Cleveland enact anti-predatory lending law to cap interest charges. Regulatory interventions became necessary to boost investor confidence and lenders had to reduce credit for even the legitimate borrowers (Zywicki & Adamson, 2009).

The Special-Purpose Vehicles (SPVs), which bought most of the subprime loans, became the victims of asymmetric information since they could not know that the loan originators had actually lent mortgages with an intention of selling them off their balance sheets in the short run. By early 2008, commercial mortgage debt outstanding stood at $3.38 trillion compared to $500 billion a decade earlier. Of that number, about $0.92 trillion were held by CMBS investors. The issuance of CMBS grew rapidly from $2 billion in 1989 to some $630 billion in year 2006, before falling back to less than $100 billion in year 2008 (An *et al.*, 2010). According to Mishkin (2008), the banks were only meant to guarantee the loan performance for the first 90 days. But when the secondary mortgage market came under pressure in mid 2007, most of these banks were left with relatively inferior quality of loans (Purnanandam, 2009). An analysis by Titman and Tsyplakov (2007) also finds an incentive problem in the securitization of commercial mortgages and concludes that poorly performing originators had less incentive to commit resources in credit evaluation of prospective borrowers. With the abuse of securitization, the mortgage market was to be plunged into a crisis when most of the mortgage borrowers eventually absconded.

Creditworthiness of mortgage borrowers has conventionally been measured using FICO scores in most mortage markets worldwide. Straka (2000) indicates that the use of FICO scores became more popular in practice in the mid-1990s. A FICO score is a summary measure of an individual borrower's creditworthiness based on their credit history with higher credit scores indicating higher creditworthiness. In most cases, a FICO score of 620 is considered as the threshold. A study conducted by Fannie Mae in the US (to ascertain the relationship between FICO scores and mortgage performance) showed that despite the borrowers with FICO scores of less than 620 representing only a small percentage of the total, they actually contributed to about 50% of the total defaults (Fannie Mae, 1995). In 1997, Fannie Mae provided further guidance to lenders by proposing 3 tiers of FICO scores: borrowers with FICO scores of above 720 had a 'very low' default risk, those with FICO scores between 660 and 719 had a 'low' default risk, those with FICO scores between 620 and 659 "represent a high degree of default risk" while borrowers with a credit score of 620 represent a "very high" risk of default (Fannie Mae, 1995).

2.9   Mortgage Penetration and Asymmetric Information: evidence from other Financial Markets

Low mortgage penetration rates have been documented in several housing markets. Zambia has been associated with a low mortgage uptake rate due to high interest rates and high perceived risks which make the bulk of the country's populations to be renters (Arvanitis, 2013). In Nigeria, low mortgage uptake was also cited by the Finmark Trust (2010) as only 15% of houses sold by developers were bought using mortgages. The low income households sought financing from informal sources since most of them could not afford formal mortgage financing. Over 60% of new houses in Nigeria (in each year) were financed by personal income and savings. Nigeria required N 49 trillion (326 billion US dollars) to meet its housing demand as of December 2008 when the outstanding mortgage loans were only 0.5% of the country's GDP compared to 77% in USA, 80% in UK, 50% in Hong Kong, and 33% in Malaysia. The EFInA Access to Financial Services in Nigeria 2008 Survey documented that 75% of the population owned their homes, 16%

paid rent and 7% lived in homes for free. About 52% of those who lived in urban areas actually owned their homes. Access to housing finance in Nigeria was limited by high inflation, policy and regulatory challenges, slow and expensive property registration processes, insufficient capital base by lenders, high interest rates, low mortgage insurance to guarantee credit risks associated with borrowers, high cost of building materials and poor infrastructure like inaccessible roads and poor utility network (Finmark Trust, 2010).

Several studies have documented varying conclusions on the presence of asymmetric information (adverse selection and moral hazards) in different markets. Bond (1982) found no evidence of information asymmetry in the used truck market. He concludes that information challenges could be alleviated by using warranties and costly collection of vehicle history. Similarly, Chiappori and Salanie (2000) find no adverse selection or moral hazards in the French market of automobile insurance and acknowledge that agents differ in terms of risk, wealth, preferences and risk aversion. Similarly, Cawley and Philipson (1997) do not find evidence for adverse selection in life insurance contracts. On the contrary, Edelberg (2004) finds strong evidence of adverse selection in the mortgage and automobile loans credit markets upon controlling for income levels, loan size and risk aversion. Similarly, Ausubel (1999) find evidence of adverse selection in the credit card market which is in support of Calem and Mester (1995) who confirm the presence of adverse selection when credit card firms lower rates to compete for borrowers. Genesove (1993) also finds scanty evidence of adverse selection in the wholesale used market. Cardon and Hendel (1998) confirm the presence of moral hazards (but not adverse selection) in health insurance.

Bond (1982 & 1984) studied adverse selection in used vehicles and compared the frequency of maintenance of Trucks that were bought while new and those that were purchased as used vehicles. Locko (1986) studied the difference in (owner-reported) quality of cars bought from friends or relatives and cars which were purchased through newspaper adverts. Both of them found evidence of adverse selection among older vehicles only. Greenwald and Glasspiegel (1983) also analyzed the New Orleans slave

market as a "lemons" market. Similarly, Gibbons and Katz (1991) did a comparison of subsequent wages of workers displaced by plant closings and other causes. Aldea and Marin (2007) indicate that the Cordon and Hendel study of the health insurance market and Cawley and Philipson 1999 studies of the life insurance markets in the US showed no strong indications of adverse selection and moral hazards. The year 2001 Godfred study of the Dutch dental insurance demand found that agents who are more inclined to risk will tend to buy supplementary dental insurance.

2.10 Empirical Literature

2.10.1 Empirical Evidence from the Kenyan Housing Market

In Kenya, most empirical investigations have dwelt on demographic characteristics, housing regulations and environmental factors influencing household mobility. Beguy *et al.* (2010) used longitudinal data in measuring migration flows (household mobility) and demographic trends as a key determinant of mobility in Korogocho and Viwandani settlements of Nairobi between years 2003 to 2007. The study found that gender and age had a strong influence on mobility; the presence of basic amenities like electricity reduced chances of migration; mobility/migration was high among early adults especially between ages 20 to 24; gender was a factor explaining mobility since women were more mobile than men. Beguy *et al.* (2010) further indicate that educational attainment, marital status, characteristics of a house and ethnic groupings are key factors explaining mobility amongst low income households. The study attributed housing formation to ethnic affiliation (tribe) by finding that about 64% of the residents who owned houses in Nairobi were from the kikuyu community. The study further found that those who were in marital unions were less likely to migrate, mobility within Korogocho and Viwandani settlements was highly attributed to notice of demolition, educational levels, insecurity concerns, differences attributed to ethinicity, access to electricity, lack of stable source of income, calendar effects (mobility was high in the months of December and February) and changes in marital status (when women got married, they increased their mobility).

Makachia (2010) investigated transformation of housing in formal housing in the rental housing and owner-occupied housing in Kaloleni and Buruburu Estates of Nairobi, Kenya. He found that economic and social factors explained transformation of residential housing in the two estates. The study concentrated on dweller initiated transformations associated with strategies adopted in the design of housing and inherent failures and successes. Insecurity, physical space, amenities, transportation system, size, type and location of house, economic factors, age of household head, size of household, income, occupation and tribal affiliation were key social and economic factors affecting housing transformation within the two estates (Makachia, 2010).

Imwati (2010) used cluster sampling in studying planning and the role of demographics in the peri-urban settlement of Mlolongo Township, Nairobi and found that indeed, demographics did influence settlements in Mlolongo. The study focused on the slums and shanties especially the low incomes, unemployed and those living in poor conditions and found that the informal settlements varied in demographics, size, social and ethnic composition with income being the key determinant of housing decisions amongst most households.

Oundo (2011) investigated the commercial urban forms in Nairobi with special interest on the impact of location decisions on performance of commercial real estate markets. He found that choice of commercial location decisions were influenced by service charges, easy access to clients/customers, transportation system, rent and other economic factors. Nairobi contributes more than half of Kenya's GDP and the city has a dispersed urban form. Most commercial centres in Nairobi are located closer to residential neighbourhoods (especially Upperhill and Westlands) and hence, accessibility, location and neighbourhood characteristics were key consideration for commercial housing decisions. The study found that decisions on location of commercial housing in Nairobi were highly explained by increase in population, easy access to customers, transportation system, supply of utilities, sewerage system, street lighting, quality of building, space for business expansion, rent and service charges (occupational costs), economic growth, the physical state of the inner city and a firm's individual location decision. The inner city of

Nairobi suffers from poor environmental conditions, high rate of crime, inadequate schools, poor housing, traffic congestion amongst others. Clustering of commercial urban units was actually explained by time factor and cost of travel (Oundo, 2011).

2.10.2 Empirical Evidence from Foreign Housing Markets

The efficiency of real estate markets has been extensively studied across the world. In particular, most empirical investigations testing housing market efficiency have dwelt on establishing the existence of price cycles, tests of weak form and semi strong form efficiency. A summary of such empirical investigations is presented on Table 2.1 below.

Table 2.1: Empirical Evidence on Efficiency of Housing Market

Researcher(s) and Year	Type of Property	Context of study	Type of Investigation	Findings on Market Efficiency
Guy-1984 and 1985	Residential (income generating)	Canada-Vancouver	Weak & Semi-strong form efficiency	Efficient
Rayburn *et al.*-1987	Residential (single family)	USA-Memphis	Weak form of efficiency	Efficient (70-84), Inefficient (70-75)
Hosios & Pesando-1991	Residential	Canada-Toronto	Weak form of efficiency	Inefficient
Ito & Hirono-1993	Residential	Japan-Tokyo	Weak form of efficiency	Inefficient
Clayton-1998	Residential	Canada-Vancouver	Weak/Semi-strong forms of efficiency	Inefficient
Wang-2004	Residential	USA-Manhattan	Weak form of efficiency, test of market fundamentals	Inefficient
Rosenthal-2006	Residential	UK	Weak form of Market Efficiency	Efficient
Larsen & Weum-2007	Residential	Norway- Oslo	Weak form of Market Efficiency	Inefficient
Mankiw & Weil-	Residential	USA	Semi-strong form of efficiency, Test	Inefficient

			for market fundamentals	
1989				
Case & Shiller-1990	Residential (single family houses)	USA	Semi-strong form of efficiency, Test for market fundamentals	Inefficient
Barkham & Geltner-1996	Residential	UK	Semi-strong form of efficiency	Inefficient
Jaffe-1994	Residential/Commercial	Sweden	Existence of price cycles	Efficient
Clayton-1996	Commercial	Canada	Existence of price cycles	Inefficient
Fu & Ng-2001	Residential/Commercial	Hong Kong	Existence of price cycles	Inefficient
Salins-2002	Residential	USA-New York	Existence of price cycles	Inefficient
Ball-2006	Residential	Europe	Existence of price cycles	Inefficient
Hekman-1985	Office	USA-14 cities	Existence of price cycles	Efficient
Meese & Wallace-2003	Residential	France- Paris	Existence of price cycles, Test of market fundamentals	Efficient/Inefficient
Englund & Loannides-1997	Residential (single family houses)	15 OECD Countries	Existence of International Price Cycle	Efficient
Renaud-1997	Residential/Office/Industrial/Business	USA, Europe, Asia & Latin America	Existence of International Price Cycle	Inefficient

Source: literature reviewed by researcher, 2014

Empirical evidence has extensively cited demographics as a key factor in explaining household mobility. The Rossi (1955) study found that change of employment status, attainment of higher education and increase in household size all influenced mobility while the presence of school going children (in a family) restricted mobility. In Allegheny County US, Cronin (1982) found that household income, household

expenditure levels, size of the household, age, race, and education of household head to be some of the critical demographics influencing the choice of a residential housing unit. Quigley and Weinberg (1977) found that age, income and duration of residence were not directly affecting the decision by a household to move.

Evidence on household demographics and home ownership has been cited in several real estate markets. In Malaysia, Tan *et al.* (2008) found that housing choices were affected by the location of the house, employment and income trends, socio-cultural and demographics. In Netherlands and Germany, Mulder (2006) found that couples preferred housing of certain quality before they started having children; in Germany and Australia, homeowners were less likely to divorce than renters while those in stable marriages were more likely to buy a home. This was also evident in Britain where homeownership was strongly related to first being married. Similalry, Hood (1999) found that marital status had a strong influence on home ownership unlike family size; as the family size exceeded four, fewer families actually owned homes. In the US, Mundra and Oyelere (2013) found that the older the household head, being a female and higher educational attainment increased chances of home ownership. In Spain, Fisher and Jaffe (2003) found that the probability of owning a home increased with age and educational attainment.

Fisher and Jaffe cite a study conducted in 32 countries by Angel which found that on average, household size explained home ownership rates. Interestingly, Angel study found that wealth was not correlated to homeownership rates. Doling (2008) found that in Italy, Greece, Portugal and Spain, older people were less likely to move. Quigley and Weinberg (1977) found that mobility rates increased with family size, short-distance moves were associated with females and the never married were less likely to move than the ever married; it also emerged that the older the household head, the lower the mobility rate.

In Allegheny County USA, Cronin (1982) found that minorities facing discrimination expended much less time and resources on search. Using cheaper transportation means led to higher levels of search; households with a car searched more extensively while lower cost sources of information led to higher levels of optimal search; using real estate

agents resulted in more neighbourhoods and dueling units searched; minority households searched fewer housing units than their nonminority counterparts. Rossi (1955) found that most households searched fewer units and searched for shorter periods.

Asymmetric information has been cited to influence decisions besides leading to buyer decision biases. Phipps (1988) also notes that heuristics have been empirically cited as rules that govern housing decisions. The Garmaise and Moskowitz (2004) empirical investigation on 7 states in the US confirmed the presence asymmetric information in the housing markets. They found that buyers alleviated their asymmetric information by buying properties with long income history, avoiding trades with informed agents, and making short distance moves. Northcraft and Neale (1987) found that price anchors influenced valuations by both amateurs and experts. In their Baton Rogue Louisiana US study, Turnbull and Sirmans (1993) confirmed the presence of asymmetric information since first-time buyers lacked the experience of repeat buyers and hence, they lacked important insights when collecting and utilizing relevant market information. However, some studies did not confirm the presence of asymmetric information in some housing markets (Turnbull & Sirmans, 1993; Watkins, 1998).

 Ambrose *et al.* (2006) empirical investigation sought to ascertain the impact of conflict of interest on servicing Non-Performing Mortgage Loans. Their sample was made up of 46,082 loans in 363 CMBS deals obtained from the Intex CMBS database- most of the loans were originated between 1997 and 1999. In total, 27,275 loans had different master and special servers, 25,673 had a master server who also performed carried out other special servicing roles for other loans, 1,602 loans had a master server that did not also perform special servicing functions for other loans while 17,044 loans had a special server that only performed special servicing functions for loans in the database (Ambrose *et al.,* 2006).

Empirical investigation on asymmetric information and adverse selection by An *et al.* (2010) was based on 142 CMBS deals and 16,760 CMBS loans in their 1994-2000 sample period. Specifically, their sample included 13,655 conduit loans and 3,105

portfolio loans sold into securitization markets during the period 1994-2000. An e*t al.* found that CMBS investors paid a higher price for CMBS backed by such conduit loans comparative to portfolio CMBS deals. Downing *et al.* (2009) arrive at similar conclusions that residential mortgage-backed securities sold by Freddie Mac to SPVs were generally of poor credit quality compared to those they retained in their portfolio. Freddie Mac simply used private information to sell "lemons" to securitization markets.

Much of the empirical evidence on asymmetric information problems in the real estate market is relatively new. Chiappori and Salanie (2000) acknowledge that there is a lag between asymmetric information theory and empirical evidence. Using indirect measures, contradictory findings on the presence or absence of adverse selection and moral hazards have been documented. Dell'Ariccia *et al.* (2008) used individual loan data and took denial rates to be their main measure of the quality of lending and find the declines in lending standards over time to be more conspicuous in those areas where most of the loans were sold in the secondary market. Keys *et al.* (2010) compare the performance of securitized subprime mortgage loans originated by 48 banks against those issued by 57 independent lenders and found the quality of the securitized loans to be poorer. Ambrose *et al.,* (2005) analyzed a portfolio of loans originated by a single lender, most of which were eventually securitized, and found that the loans retained in the originators portfolio were of disproportionately higher risk.

The Lambson *et al.* (2004) study uses data for nearly 3,574 apartment transactions between year 1992 and 2002 with approximately half of them involving buyers from outside Phoenix (in the state of Arizona, US). The data contained commonly available data like property size, age of the property and data that some data that could not be readily available such as covered parking, club houses within the area and laundry facilities. Their proposition was that buyers from outside the Phoenix metropolitan area were destined to pay a higher premium than those from within Phoenix. They allude to the fact that the market price of a specific apartment is not known (only the list price is known) and that the relevant information is not easily accessed and apartments are hard

to value. The Lambson *et al.* (2004) study models a proposition that out-of-state buyers will pay a statistically higher premium that their in-state counterparts on the premise that their costs of searching for relevant information about the property in question is high, they come into the market with higher biased believes that prices will be higher than in their own markets (anchoring) and time limitation since they have to make a buy 'quickly'.

The empirical findings have supported the existence of asymmetric information in housing markets while other studies have concluded otherwise. Evidence by Lambson *et al.* (2004) contradicts the findings of Turnbull and Sirmans (1993) and Myer, He and Webb (1992). Turnbull and Sirmans (1993) use 151 real property transactions and conclude that out-of-town buyers do not pay significantly different prices than their in-town counterparts. Similarly, Myer *et al.* (1992) conclude that out-of-country buyer premium does not exist. Contrastingly, Miller *et al.* (1998) findings support Lambson *et al.* (2004) since they use 421 observations (with 30% of them being Japanese buyers) and find that Japanese buyers paid higher real property prices for real property purchases in two Honolulu neighbourhoods in the late 1980s. Similarly, Northcraft and Neale (1987) find an anchoring bias in the real estate market: when they asked amateur and expert valuers to give valuations of houses upon giving them some reference prices, the former priced theim highly than the latter. The study found that the influence of experience with the real estate market and buyer expertise is dependent on demographics such as age, gender, years lived in the area, and whether one had ever bought a house within the area or they were first-time buyers. Simonsohn and Loewenstein (2002) address the problem of anchoring in real estate by concluding that buyers who are accustomed to high prices buy larger or more expensive homes than buyers accustomed to lower prices- a bias which is associated with asymmetric information.

Cronin (1982) considers household income, household expenditure levels, size of the household, age, race, and education of household head to be the critical demographic characteristic influencing the choice of residential housing unit. But his Allegheny County US empirical investigation targeted low-income households and ignored the

influence of asymmetric information in choice of housing. Similarly, Case and Shiller (1989) cite Engle, Lilien and Watson's San Diego resale housing market study of 1973 to 1980 which concluded that movements in housing market prices were largely explained by demographically driven changes. Eventually, Case and Shiller (1989) study found that market for single-family homes did not appear to be efficient.

While addressing the price adjustment mechanism for real property rental market in the US, Eubank and Sirmans (1979) found that rent and operating expenses were some of the key demographics that explained variations in rental price on multi-family dwellings. The study found that in the US market, different building types may have different rent adjustment mechanism contrary to empirical evidence from Canada. Such variations could also be explained by the mismatch between supply of housing and demand and the environmental factors such as rate of crime, available amenities and general infrastructure. The New Haven Metropolis Area study of 1962-1969 by Grether and Mieszkowski (1974) sought to explain determinants of real estate values based on characteristics of the house, the surrounding environments, available amenities and public utilities within the neighbourhood, location of the house, population density, pollution in the area and distance.

The Baton Rogue, Louisiana US study by Turnbull and Sirmans (1993) found that asymmetric information challenges were so conspicuous in real estate markets that first-time property buyers lack the experience of repeat buyers and consequently, they lack important insights when collecting and utilizing relevant market information. However, their study did not investigate the contributions of demographics and the nature of the property market on ones experience. Similarly, Turnbull and Sirmans found that different groups of home buyers like first-time buyers and out-of-town buyers with potentially different levels of information did not pay significantly different prices for houses. This implied that the property market in US was largely efficient in terms of pricing of houses. As to whether existing institutions indeed effectively disseminate relevant information to real property buyers, Turnbull and Sirmans (1993) took various segments of residential property buyers as proxies for varying levels of information and search costs. They found

that the various categories of homebuyers did not pay significantly different prices. In addition, first-time buyers purchased less expensive and smaller houses compared to buyers who had bought homes before within the same market. Case and Shiller (1989) found that the market for single-family homes did not appear to be efficient contrary to Turnbull and Sirmans (1993) findings.

To solve information problems, Garmaise and Moskowitz (2004) contend that market participants would ensure that the distance between them and the property they buy is short- this is usually the case in high information asymmetry environments. The less-informed agents who live far away from the properties will opt to buy property with more information. They find that on average, buyers were 232 kilometres away from the property while sellers were located more than 264 kilometres away. Hence, buyers will use distance to solve their information challenges by buying property in that was not far away. With respect to property age, they note that properties with longer income histories would give buyers more information about the property and the local real estate market. High property taxes would imply high values for the properties. Such informal information variables would not be adequate in alleviating information asymmetry hence the need for extensive search.

2.11 Research Gaps Identified

The review of local and foreign empirical literature presents several knowledge gaps. Firstly, the studies conceptualize demographic characteristics as factors influencing the likelihood of home ownership but very few studies conceptualize demographics and predictors of real estate investment decisions. In addition, the cited empirical evidence present contradictions on which demographics precisely explain home ownership and real estate investment decisions: the studies also fail to explain whether demographics have a significant influence on housing decision choices. Secondly, most of the reviewed studies on housing market information tend to focus more on search for market information and tests of information efficiency of housing markets as opposed to asymmetric information and how the latter influences housing decisions.

Thirdly, most of the studies on housing search dwell on what kinds of information buyers search for, how they conduct search as opposed to how search effort and costs moderates the relationship between demographic characteristics and real estate investment decisions. Fourthly, studies on asymmetric information dwell more on how buyers use different psychological biases to alleviate asymmetric information: the studies do not explain how asymmetric information moderates the relationship between demographic characteristics and housing decisions. Fifthly, most of the documented empirical studies focus on the process and environment in which households make real estate investment decisions as opposed to explaining the factors influencing a household's real estate investment decisions. Lastly, contextual differences are noteworthy: the findings on housing studies in foreign markets may not be extended to the real estate market in Nairobi County, Kenya. Consequently, the knowledge gaps documented above formed a basis for this empirical investigation.

Table 2.2: Empirical Evidence and Research Gaps

Study	Context & Focus	Key findings	Research gaps	Focus of this Study
Cronin (1982)	Allegheny County (Pittsburgh), USA. *Focused on* testing presence of asymmetric information and alleviation of the same	*Households do search efficiently for housing. *Minorities facing discrimination in real estate markets searched less. *Searching period and number of houses searched varied across different households. *Search efforts influenced the level of search. *low cost sources of information led to higher levels of search.	*the study only confined itself to a few demographics *Did not investigate how demographics influence on decisions. *study only focused on low-incomes. *Study ignored asymmetric information influences and decision biases.	*Focused on residential real estate with particular interest on housing decision choices. *Investigated the influence of Search and Asymmetric Information on housing decision choices.

Study	Context & Focus	Key findings	Research gaps	Focus of this Study
Oundo (2011)	Kenya, Nairobi City *Focus* on finding out what explains clustering of commercial urban units and real estate regulations	*Found that time and cost explained clustering. *Found that location choices were explained by rent, service charges, accessibility, transportation system, space and infrastructure. *Demographics of the city contributed to comemrcial urban forms.	*Did investigate the influence of search. *Focused on commercial real estate but not residential housing. *Did not identify which particular demographics influenced urban forms. *Ignored asymmetric information's influence	*Focused on residential real estate. *Determined how housing search influences housing choices. *Identified the particular demographics that actually has significant influence on decisions.
Turnbull & Sirmans (1993)	Baton Rogue, Louisiana, USA. *Focused on* Testing efficiency of the market i.e did the less informed out-of-town buyers pay more for housing than their in-town counterparts.	*First time buyers bought less expensive and smaller houses than repeat buyers. *Price paid by out-of-town buyers was not statistically different from their in-town counterparts. *First-time but out-of-town buyers did not pay significantly different prices from those paid by repeat in-town counterparts.	*Study did not investigate influence of demographics on decisions. *Study ignored the effect of asymmetric information in observed differences and matching. *Study did not investigate the influence of search on the minor price differences across the two groups.	*Ascertained how asymmetric information influences decisions. * Focused on anchoring, biased beliefs, heuristics and other biases influencing buyer decisions.
Northcraft & Neale (1987)	Tucson, Arizona, USA. *Focused on* efficiency of housing prices and influence of decision biases	*Listing price anchors significantly influenced values assigned to properties for both amateur and experts in the real estate market. *Most of the expert and amateur demographics were not signfinificantly related to the degree of anchoring.	*Did not explain whether demographic differences across groups could also influence other decisions like source of financing, size of house etc. *Study did not explore how decision biases influence housing decisions.	*Focused on housing search and influence of demographics and asymmetric information on decisions. *Ascertained the influence of experience, expertise, anchoring, heuristics, biased believes and other biases on decision choices.
Imwati (2010)	Mlolongo Township, Kenya *Focused on* factors affecting	*Income determined settlements. *Informal settlements varied in demographics, size, social and ethninc composition.	*Focused more on the environmental factors influencing formation of settlements. *Did not focus on how unique demographics	*Identified how the housing environment influenced buyer search behaviour. *Study targeted both middle and high

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Study	Context & Focus	Key findings	Research gaps	Focus of this Study
	planning of urban low-income community settlements.	*Infrastructure was a factor in formation of settlements.	explained mobility of households. *Ignored the influence of search and asymmetric information. *only focused on low incomes- renters.	Income households. *Focused on home owners and not residential housing renters.
Garmaise & Moskowitz (2004)	Seven States in the US *Focused on* testing the presence of asymmetric information and how buyers alleviated the same	*To alleviate information problems, buyers bought property in the neighbourhood, those with long income history and avoiding trade with those who are more informed. *Sellers have more relevant market information than buyers. *Distance betwen buyers and property was shorter in asymmetric information situations. Found mixed and weak evidence on asymmetric information.	*Study was restricted to commercial property and not residential property. *influence of search was not investigated in such asymmetric information environment. *Did no explain how asymmetric information and buyer reactions influenced efficiency.	*Focused on ascertaining the influence of asymmetric information on decisions choices. *Focused on how buyers search and how search influences decision choices
Lambson, McQueen & Slade (2004)	Phoenix, USA. *Focused on* efficiency of price function, decision biases, search costs and whether out-of-state buyers paid more for real estate compared to their in-state counterparts.	*Time constrained buyers paid a premium on house purchases. *Out-of-state buyers paid statistically significant higher prices than their in-state counterparts. *Similarly, buyers from states bordering Arizona paid statistically insignificant lower premiums compared to those from far away states. *Higher premiums paid were attributed to time constrained purchasing, anchoring and search costs.	*Study did not investigate demographics, decision biases and asymmetric information on buyer decisions. *psychological biases were only investigated to the extent of their influence on purchase price.	*Investigated the influence of search costs and demographics on decision choices. *Ascertained the efficiency of housing search and how demographics and asymmetric information influenced housing decision choices by households.

Study	Context & Focus	Key findings	Research gaps	Focus of this Study
Makachia (2010)	Kaloleni & Buruburu Estates of Nairobi, Kenya. *Focused on* factors influencing formal housing transformation in Nairobi.	*Home improvements by households were explained by their demographics. *Income was a major trigger of transformation. *Development control laws and building codes influenced neighbouring characteristics. *There were social and economic dimensions of housing transformation.	*Didn't focus on how demographics explain housing mobility and residential decisions. *focused more on environmental conditions influencing transformation but ignored search and asymmetric information. *focused on low & middle incomes; renters and owners.	*Focused at how Demographic characteristics explain housing decisions. *Focused on home owners: middle and high incomes.
Watkins (1998)	Glasgow, Scotland,UK *Focused on* informational efficiency of market and constraints of information search.	*New entrants did not pay more for housing compared to repeat buyers. *First-time buyers bought smaller houses. *Property prices were largely influence by neighbourhood and features of the houses. *all buyers entered the market with imperfect information.	*The study did not ascertain buyer search behaviour and influence of demographics. *Study did not investigate decision biases and asymmetric information in influencing property prices.	*Ascertained the nature of information search and how it influenced decisions. *Ascertained how demographics influenced buyer search behavior and by extension housing decision choices.
Beguy *et al.* (2010)	Korogocho & Viwandani settlements of Nairobi, Kenya. *Focused on* demographics and other factors explaining migration between year 2003-2007.	* Mobility rates were high amongst early adults and amongst female. *Household mobility was also explained by: educational attainment, getting married for the women, ethnic affiliation, availability of electricity, stability in income, month of the year and notice of demolition.	*Study focused on how demographics explained decisions to move but not decision choices. *Did not focus on household search behaviour and information problems in housing markets in the slums.	*Explained how demographics and housing search behaviour influences housing decisions *Investigated the moderating influence of asymmetric information in explaining housing decision choices

Source: Literature reviewed by researcher, 2014

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2.12 Conceptual framework

The conceptual framework provides a visual presentation of the link between the research variables. The study was informed by four variables which are captured in the conceptual model (in Figure 2.1). Demographics were the independent variable, housing search was the mediating/intervening variable while asymmetric information was the moderating variable. Housing decisions were the dependent variable for the study.

Three variables are presumed to have an influence on a households real estate investment decisions as follows. Demographics have the main influence on real estate investment decisions as documented in the reviewed literature. In the course of this relationship, the unique demographic characteristics of a household compel home buyers to expend adequate time and resources in housing search. The quality of housing search will consequently influence the type of housing decisions that home buyers will make. Hence, housing search had a mediating influence on the demographics- housing decisions relationship. However, Asymmetric information will eventually emerge as a third variable in the study since it has a contingent effect on the relationship between demographics and housing decisions. The conceptual model in Figure 2.1 gives a visual presentation of the relationships explained.

Figure 2.1: Conceptual Model

Intervening/Mediating Variable

HOUSING SEARCH

- Number of visits made to view various apartments and apartment locations visited
- Cost of property inspection and property valuation.
- Search for true value of apartment
- Time devoted by buyer in searching.
- Reading real property magazines, journals and billboards.
- Number of neighborhoods/areas actively searched.
- Average distance covered while searching.
- Number of mortgage financiers contacted for financing.
- Safety of the apartment and the area

H_2

Independent variable H_4 **Dependent Variable**

DEMOGRAPHICS

- Gender of owner of house
- Age of owner of house
- Marital status of owner of house
- Profession of owner of house
- Education level of owner of house
- Income of household
- Size of family
- Household composition
- Level of household expenditure
- Experience with housing markets
- Expertise in real estate matters
- Region of affiliation of owner of house

H_4

HOUSING DECISIONS

*Choice of Neighbourhood
*Choice of location of house
*Source of financing
*Size of house

H_3 H_4

Moderating Variable

ASYMMETRIC INFORMATION
- Moral hazards by sellers and property agents
- Adverse selection problems on the part of buyers
- Heuristics and biased beliefs
- Anchoring bias

H_1

Source: researcher, 2014

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2.13 Research Hypotheses

Kothari (2004) contends that a hypothesis must possess the following characteristics: it should be clear and precise, capable of being tested, it should state relationship between variables, it should be limited in scope and must be specific. In addition, a hypothesis should be stated as far as possible in most simple terms besides being consistent with most known facts; it should be amenable to testing within a reasonable time and must explain the facts that gave rise to the need for explanation. Hence, this study took into account the above propositions in formulating the research hypotheses.

The study tested the following null hypotheses:

H_1- Demographics do not have a significant influence on housing decisions amongst apartment households in Nairobi County, Kenya.

H_2- The influence of demographics on housing decisions amongst apartment households in Nairobi County, Kenya is not significantly mediated by housing search.

H_3- The influence of demographics on housing decisions amongst apartment households in Nairobi County, Kenya is not significantly moderated by asymmetric information.

H_4- The joint influence of demographics, housing search and asymmetric information on housing decisions amongst households in Nairobi County, Kenya is not greater than the influence of demographics on such decisions.

2.14 Chapter Summary

The chapter contains a review of relevant academic and empirical literature on the study variables; it also presents a highlight of relevant sections of Kenya government policy documents on housing. First, the chapter presents an overview of the theoretical anchorage of the study by highlighting the theories informing the study then it presents a review of literature on demographic characteristics, housing search, asymmetric information and efficiency of housing markets. In addition, the chapter presents empirical literature from the Kenyan and foreign residential housing markets and further presents research gaps that formed the motivation for the study.

The chapter also captures an overview of relevant housing sections of The Kenya Constitution 2010, The National Housing Policy of 2004 (and its prescriptions on how to manage housing and environmental issues in Kenya), The National Land Policy of 2009 (on land laws and environment management) and The Kenya Vision 2030 (with particular reference to Housing under the Social Pillar). The chapter also captures a conceptual model that the researcher modeled to form the basis of testing relationships which are conceptualized in the research hypotheses presented at the end of the chapter.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This section encapsulates the research methods employed in the study. In particular, it highlights the research philosophy that was adopted, the research design, the target population of study, sample size computation and sampling method, data collection method that were adopted and an overview of data analysis techniques that were used. The section also provides an operationalization of the research variables which informed the study.

3.2 Research Philosophy

There are two broad research paradigms that is positivism and phenomenology. Positivism is often considered appropriate where statistical methods of data analysis are applicable. The philosophy focuses on facts while also looking for causality amongst variables under investigation by testing hypotheses which are eventually verified or rejected. Positivism seeks to develop conceptual and theoretical structures and then tests the same through empirical investigation (Saunders *et al.,* 2007). Conversely, Phenomenology is qualitative in nature: it is mainly applicable in exploratory theory building rather than theory testing. Phenomenology suffers from generalizability of research findings.

The positivist philosophy was adopted for this study. This philosophy is considered to be more objective and uses scientific method besides testing relationships in a study. The positivists hold that facts do exist and can actually be measured. The philosophy was deemed ideal for the study since Mukherji and Albion (2010) contend that positivism allows for use of survey approach hence covering a wider population area. Since the study involved testing of relationships between demographic characteristics, housing search, asymmetric information and real estate investment decisions, the positivist approach was considered appropriate. In addition, data for the study was collected from a

large number of respondents who were drawn from different parts of Nairobi County hence the justification of positivism as opposed to phenomenology.

3.3 Research Design

Research design is a configuration of the research which constitutes how the research is structured; it is the logical thread which holds together all the crucial aspects of the research so that they can derive meaning (Laurel, 2011; Kothari, 2010). Descriptive design could be either longitudinal or cross-sectional. Descriptive cross-sectional design (also called sample survey) was adopted for the study. This design is appropriate for studies where data is collected from a large sample with several variables being studies at the same point in time as opposed to longitudinal designs where variables are studied over a period of time. In this study, the above requirement was met since data was collected from a large sample of households drawn from different parts of Nairobi County. Descriptive design is appropriate when the purpose is describing characteristics of certain groups and the study of variables occurs at a single point of time; the design facilitates description of trends, attitudes or opinions of a large group in terms of asking questions of who, what, when, where and how of the topic (Burns & Bush, 2010; Churchill Jr. & Iacobucci, 2005). It is on this basis that the design was adopted for this study.

In causal research designs, the researcher attempts to ascertain if the independent variable causes the occurrence of the dependent variable. Since this was not the thrust of this study, then descriptive cross-sectional survey was considered appropriate. Saunders *et al.* (2009) indicates that survey is a popular and common strategy in business and management research. Survey design was considered ideal since Mugenda and Mugenda (2003) indicate that it can be used for explaining or exploring the existing status of two or more variables, at a given point in time, and is usually the most appropriate to measure characteristics of large populations.

3.4 Population of the Study

A population is a group of individuals or objects with common observable characteristics (Mugenda & Mugenda, 2003). The unit of analysis for the study was the household. The target population of the study was all apartment households in Nairobi County who bought their apartments two years preceding the data collection exercise. The two year period was considered since certain demographics change often and with the passage of time, households were likely to forget their prevailing demographic characteristics and search behaviour at the time when they bought their apartment houses.

County housing market data was used for the study on the justification that counties are 'rich' in demographics due to their cosmopolitan composition. This has been supported empirically since several housing studies utilized apartment data from cosmopolitan settings worldwide especially counties (Case & Shiller, 1989; Lambson *et al.*, 2007; Eubank & Sirmans, 1979; Cronin, 1982; Garmaise & Moskowitz, 2004). Sale of apartments is the most popular among property developers in Nairobi County; apartments afford data collection convenience of accessing several home owners within the same location.

3.5 Sampling and Sampling method

Sampling is the selection of the units that will be studied out of the target population of the study. A good sample should be adequate and representative. The size of the sample must be chosen by some logical process (Kothari, 2004). Consequently, the study used SMART methodology (2012) to determine the sample size for the study. This methodology proposes a formulae for cluster sampling studies. The cost of conducting the research, nature of research, time limitation and research design are some of the common factors that ordinarily influence the sample size for most studies.

Cooper and Schindler (2003) indicate that sampling methods could be either probability or non probability. Cluster sampling (a probability sampling design) was used for this study. In particular, two-stage cluster sampling was adopted whereby a sample was taken

from each the 3 clusters of households using simple random sampling. This sampling method divides the population into different clusters each of which contains individuals with different characteristics (Black, 1999). In studying households in Mlolongo Township in Machakos, Kenya and households in Kaloleni and Buruburu estates in Nairobi, Kenya, Imwati (2010) and Makachia (2010) both used two-stage cluster sampling respectively. Oundo (2011) indicates that specialized residential and commercial neighbourhoods eventually arise out of clustering.

Cluster sampling is suitable in situations where the area of interest happens to be a big one and complications exist in generating a sampling frame despite the target population already being grouped into 'natural' clusters like blocks of houses, schools and hospitals (Shaughnessy & Zechmeister, 1990). Considering that this study was carried out over a wide area and the fact that it was impractical to generate a sampling frame of apartment owner-occupied households in the County, cluster sampling became appropriate for the study. Cluster sampling divides the area into a number of smaller non-overlapping areas like families in the same block which are similar in social class, income, ethnic origin and other characteristics (McDaniel Jr. & Gates, 2010; Cooper & Schindler, 2003).

The sample size of the study was 226 households as computed below using the sample size formulae for cluster sampling (SMART methodology, 2012).

$$n = \frac{(t^2 \times p \times q) \times DEFF}{d^2}$$

where: n= sample size (number of households); t= linked to 95% confidence interval- for cluster sampling (2.045); p= expected prevalence (a fraction of 1 i.e. 10% - 0.10); q= 1-p (expected non-prevalence i.e. 1-0.10 = 0.90); d= relative desired precision (5% i.e. 0.05) and DEFF (Design Effect) of 1.5. Design effect is a 'corrector factor' to account for the heterogeinity between clusters with regard to the measured indicator and it is only used to determine sample size in cluster sampling. If there is no previous information about design effect, then 1.5 is used (SMART methodology, 2012). Aliaga and Ren (2006) note

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that design effect of complex surveys was first considered by Kish (1965) and then studied by Kish and Frankel (1974) and is now widely used as a measure of efficiency of complex survey designs.

Hence, sample size (n) = $((2.045)^2$ X $\dfrac{0.10 \text{x} 0.90}{(0.05)^2}$) X 1.5 = $(4.18202$ X $\dfrac{0.09}{0.0025}$) X 1.5

Sample size(n)= (4.18202 X 36) X 1.5 = 150.55272 X 1.5= 225.82908 $\approx$ **226 households**

The researcher chose three clusters (2,3 and 4 bedroomed apartments) from which 226 households were sampled (see Appendix III). The researcher then used the McDaniel Jr. and Gates (2010) approach for Cluster sampling which narrows down from residential blocks to homes in picking the respondents using simple random sampling.

3.6 Data Collection Methods

Research data was collected using a self-administered questionnaires delivered to different households in the sampled apartments within Nairobi County. The respondent for the study was the owner of the apartment house who was taken to be the representative of the household. The research instrument was delivered using the 'drop-and-pick-later' technique. The researcher engaged a research assistant to assist in the data collection upon being adequately trained for the exercise.

Kothari (2004) highlights the strengths of using questionnaires to include the fact that they are less expensive and can be administered to a large number of respondents over a large geographical area; they can also be tailored to the specific respondents; they eliminates bias due to the framing of the questions differently for different respondents. However, Varkeviser (2003) cautions of some weaknesses of using questionnaires such as: the need for the researcher to be well trained hence some of the important information from some respondents may not be recorded especially for the spontaneous remarks. It may also consume a lot of time while waiting for feedback from respondents; others may

choose not to reply, which may increase bias in the study. In addition, misinterpretations and misrepresentations may occur when using the questionnaires (Douglas, 2006).

The data collection process was carried out in a systematic way. Firstly, the researcher identified the apartments and their exact location from the list that had been generated earlier (Appendix II). Secondly, the researcher and the research assistant would go to the apartments in different parts of the county with the questionnaire and the Letter of Introduction from the University of Nairobi Doctoral Studies Programme. Thirdly, the two would introduce themselves to the security guards and/or caretakers at the entrance and make their intention known. Fourthly, the security guards would interrogate them and eventually allow them into the compound. The guards would then help them identify the owner-occupied apartment houses. Fifthly, researcher and the research assistant would approach the houses and introduce themselves and ask to briefly meet the owner of the apartment house. Sixthly, the two would briefly interact with the owner of the house and give him/her the questionnaire. The respondent would be given a week to fill the questionnaire. Seventhly, the researcher and research assistant would take note of the house details and come back after about ten days. Lastly, the researcher and the research assistant would revert after ten days and still introduce themselves to the security guards in order to collect the questionnaires from the respective houses. Apartment homes with renters were deliberately avoided due to the complications of accessing the owners of the houses to fill the questionnaire.

3.7 Data Analysis
Data was analyzed using Multiple regression analysis (standard), Hierarchical multiple regression analysis, Factor analysis, Descriptive statistics and Cross tabulation. Regression analyses and hypotheses tests were both conducted at a significance level (α) of 0.05. The Coefficient of determination (R^2) and p-values were used to facilitate the interpretation of the regression output from Statistical Package for Social Sciences (SPSS). Results for multiple regression analysis (standard) were presented in 3 tables: from the summary table, the researcher deduced findings on the predictive power of the model by evaluating R^2. From the ANOVA table, the study ascertained the significance

of the model overall; regression functions were modeled only if the model overall was significant.

From the Coefficients table, results of the regression coefficients (beta coefficients) provided results on the nature of relationship between each predictor factor and the outcome (dependent factor); the beta values provided information on the significance of each of the predictors in explaining variations in the dependent variable. A positive beta sign mean a positive relationship between the independent factor and the outcome (dependent variable); a negative beta sign mean a negative relationship between the independent factor and the outcome (dependent variable).

The mediating and moderating variable influence were both analyzed using hierarchical multiple regression analysis using their respective SPSS hierarchical tests. The method tests the influence of several variables in steps. In particular, demographics were entered in the first step with either housing search or asymmetric information being entered in the second step while the influence of demographics was being 'suppressed'. This meant that demographics were the control variable as the study sought to capture the influence of either the mediator or moderator variable. The mediator or moderator effect would result if there was a quantum change in the second model (R^2 change of greater than zero). To determine the change in predictive power of model 2, a change in the F-value in model 2 would be analyzed. The higher the F-value in the second step/model 2, the better the model (increased predictive power) since this indicates improved prediction ability (Field, 2009).

The following regression functions were modeled for purposes of the study:

1. $Y_{ij} = \beta_{01} + \beta_1 X_1 + \acute{\varepsilon}$

Where Y_{ij} -   is the dependent variable -**Housing Decisions**
   β_{01}- is the intercept
   β_1 -   regression coefficients for demographics
   X_1 - the predictor variable- **Demographics**
   $\acute{\varepsilon}$- error term

2. $Y_{ij} = \beta_{02} + \beta_{xo}X_0 + \beta_2 X_2 + \acute{\varepsilon}$

Where Y_{ij} -   is the dependent variable-**Housing Decisions**

         β_{02}-   is the intercept- a constant

         B_{xo} **-** Regression coefficients for demographics

         X_0-   **Variable whose influence is controlled i.e. demographics**

         B_2 -   are the regression coefficients for **housing search**

         X_2 -   the mediating/intervening variable- **housing search**

         $\acute{\varepsilon}$- -   error term

3. $Y_{ij} = \beta_{03} + \beta_{xo}X_0 + \beta_3 X_3 + \acute{\varepsilon}$

Where Y_{ij} -   is the dependent variable-**Housing Decisions**

         β_{03}-   is the intercept- a constant

         B_{xo} **-** Regression coefficients for demographics

         X_0-   **Variable whose influence is controlled i.e. demographics**

         B_3 -   are the regression coefficients for **asymmetric information**

         X_3 -   the moderating variable- **asymmetric information**

         $\acute{\varepsilon}$- -   error term

4. $Y_{ij} = \beta_{04} + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \acute{\varepsilon}$

Where Y_{ij} -   is the dependent variable- **Housing Decisions**

         β_{04}-   is the intercept

         $\beta_{1\text{-}3}$ - regression coefficients for **demographics, housing search and asymmetric information** respectively.

         $X_{1\text{-}3}$ - **Demographics, Housing Search and Asymmetric Information** respectively.

         $\acute{\varepsilon}$-   error term

Besides multiple and hierarchical regression analyses, three other methods were used to analyze data. Factor analysis was employed to identify the factors accounting for much of the variation in the study. Descriptive statistics were also used to identify the most important factor for each of four study variables. Cross tabulation was adopted to show the relationships between some selected study variables especially demographics.

3.8 Operationalization of Research Variables

The study was informed by four variables whose relationships were tested. The independent variable of the study was demographic characteristics (with 12 demographic characteristics being supported by academic and empirical literature). Housing search was the intervening/mediating variable (constituting the effort buyers expended in searching and search cost). Asymmetric information was the moderating variable (with 5 decision biases which were identified from literature). The dependent variable was

housing decisions which comprised of 4 decision types. Table 3.1 operationalized each of these variables.

Table 3.1: Operationalization of Research Variables

Variable	Indicators	Measurement
Demographics (X_1)	Gender, age, educational level, profession, experience, expertise with real estate markets, region of affiliation and marital status of owner of house; size of household, income (of owner of house & spouse if any), composition of household (males, females, school going children etc), level of household expenditure.	**Closed-end questions** enquiring demographics at the time of buying the apartment house
Housing Search (X_2)	Number of visits made to various property sites, number of apartment locations visited, cost of property inspection & property valuation, search for true value of property, time devoted to search for an apartment to buy, reading real property magazines/journals and billboards, number of neighbourhoods actively searched, average distance covered in searching for house, number of lenders contacted for financing and safety of the apartment and the area.	**Closed-end questions** enquiring the search behaviour at the time of buying the apartment house
Asymmetric Information (X_3)	Moral hazards by property sellers and agents, adverse selection problems on the part of buyers, heuristics, biased beliefs and anchoring bias.	**5 point Likert scale** asking home owners to rate statements and how they influenced their decisions
Real Estate Investment Decisions (Y_{ij})	Choice of neighbourhood-social setting, choice of location of house (access to amenities and transportation system), source of financing (cash, mortgage or both) and size of house (2, 3 or 4 Bedroomed).	**Closed- end Questions** enquiring the type of housing decisions made

Source: researcher, 2014

3.9 Chapter Summary

The chapter presents the methods that were used to implement the research effort. First, it pinpoints the choice of research design (positivism) on the need to test the study hypotheses. The chapter then explains the descriptive cross-sectional survey as the research design that was adopted for the study. The target population of the study is defined to inform the unit of analysis (which was the household). The chapter also presents the sampling formula that was used to generate the sample size of the study; it also justifies the selection of cluster sampling based on the fact that housing studies targeting respondents involve clustering of the subjects.

The chapter also highlights the data collection process and the choice of questionnaire as the data collection too. The data analysis methods are also highlighted (that is multiple regression analysis (standard), hierarchical multiple regression analysis, cross tabulation and factor analysis). The regression models which were formulated by the researcher to test hypotheses are also captured in the chapter. Lastly, the chapter operationalizes the study variables (demographics, housing search, asymmetric information and housing decisions) by presenting specific indicators and measures for each of the variables.

CHAPTER FOUR

DESCRIPTIVE ANALYSIS AND TESTS

4.1 Introduction

The chapter contains a descriptive analysis of study variables and further performs statistical tests on research data. The descriptive analysis of the research data is presented using measures of central tendency and cross tabulation to appreciate the nature of the relationship between selected study variables. The chapter also presents results for several tests on research data as a precursor for multiple regression analysis. The tests include: tests for reliability, normality, multicollinearity and homogeneity of variance. Lastly, the chapter contains factor analysis of the study variables and subsequently presents results on the same.

4.2 Pretest of Research Instrument

The questionnaire was pre-tested amongst 9 households with 3 households being drawn from each of the 3 clusters that is 2, 3 and 4 bedroomed apartment households. From the responses generated out of pre-testing, a few modifications were made to some questions which were found to be unclear or ambiguous. Pre-testing is considered necessary since it is a means of determining to what extent a questionnaire communicates. It is important to pre-test the research instrument so as to actually determine the strengths and weaknesses of the questionnaire in terms of the format, wording, and order of the questions and clarity of questions (Chandran, 2004; Cooper & Shindler, 2003).

4.3 Study Response Rate

The sample size of the study was 226 households. Out of the 226 questionnaires issued to households, a total of 199 were filled and returned constituting a response rate of 88.05%. Table 4.1 below displays a summary of the same.

Table 4.1: Summary of Responses

		N	%
	Valid	196	98.49
Cases	Excluded	3	1.5
	Total	199	100.0

Out of the 199 questionnaires received, 3 were rejected and excluded from further analysis since they had several questions unanswered and hence incomplete. The responses for each cluster (size of house) are presented in Table 4.2 below.

Table 4.2: Study Response Rate

Clusters (Size of hse.)	Questionnaires Issued	Questionnaires Filled/Returned	Response Rate (%)
2 Bedroomed	83	70	84.34%
3 Bedroomed	97	91	93.81%
4 Bedroomed	46	38	82.61%
TOTALS	**226**	**199**	**88.05%**

Source: research data, 2014

The study response rate of 88.05% was considered adequate for purposes of data analysis based on support from similar empirical evidence on households. In the Canadian National Household Survey of year 2011, it was considered that a response rate of 80% was relatively good to justify analysis (Elliot, 2012).

4.4 Editing and Coding

Editing of data is a process of examining the collected raw data to detect errors and omissions and to correct the same when possible. It involves a careful scrutiny of the completed questionnaires and/or schedules to ensure that the data are accurate, consistent

with other facts gathered and uniformly entered. Editing is preceded by data entry process which manipulates data to make meaning out of it. Coding is the process of assigning numerals or other symbols to answers so that responses can be categorized into a limited number of mutually exclusive categories or classes which should be appropriate to the research problem under study (Saunders *et al.*, 2009; Kothari, 2004; Babbie, 2010). While coding nominally scaled variables such as gender, marital status and occupation, McDaniel Jr. and Gates (2010) advocate for the use of dummy variables in multiple regression analysis. The study took into account the above processes before commencing data analysis.

4.5 Cross tabulation of selected Demographic Characteristics

This section presents relationships between selected study variables. Cross tabulation is often applicable when the data in question is nominally scaled. Table 4.3 below shows the relationship between the gender of the respondents and their age profiles.

Table 4.3: Gender versus Age of home owner

		Age					Total
		20-29 Years	30-39 Years	40-49 Years	50-59 Years	60-69 Years	
Gender	Male	13	41	61	10	5	130
	Female	5	16	37	7	1	66
Total		**18**	**57**	**98**	**17**	**6**	**196**

From the results in Table 4.3 above, the study finds that most of the respondents were male and this could mean that most of the apartment houses were actually bought by males. Of the 130 male household heads, 61 of them fell in the age bracket of 40-49, which is in line with expectation since it is at this age bracket that most people would have accumulated adequate wealth to purchase a residential home. The age bracket of 30-39 follows closely with 41 household heads. The same trend applies for the female household heads since out of the 66, it emerged that 37 of them were of the former age bracket while 16 belonged to the latter age bracket.

Table 4.4 below shows the relationship between marital status and age profile of the respondents.

Table 4.4: Marital Status versus Age of owner of the house

		Age					Total
		20-29 Years	30-39 Years	40-49 Years	50-59 Years	60-69 Years	
Marital Status	Single	12	18	7	3	1	41
	Married	6	30	65	9	4	114
	Divorced	0	8	17	2	1	28
	Widowed	0	1	9	3	0	13
Total		**18**	**57**	**98**	**17**	**6**	**196**

From the results in Table 4.4 above, a significant majority of respondents were married (114, 58.16%) with only 41 of them (20.9%) being single. A significant number of respondents (82, 41.84%) were not in marriage implying that family ties amongst apartment home owners might not be quite strong in Nairobi County, Kenya. For the married home owners, a significant majority (57.03%) belonged to the age group 40-49 followed by 30-39: this confirms the observations made on the age profile in Table 4.3 as seen earlier.

Table 4.5 below presents the link between the respondents' marital status and their gender.

Table 4.5: Marital Status versus Gender of Home Owner

		Gender		Total
		Male	Female	
Marital Status	Single	23	18	41
	Married	82	32	114
	Divorced	18	10	28
	Widowed	7	6	13
Total		**130**	**66**	**196**

From Table 4.5 above, the results of the relationship between marital status and gender of the home owner indicate that most of the singles (23, 56.10%) were male; similarly, most of the married respondents were male (82, 71.93%) suggesting a strong dominance of males to the extent of this investigation.

Table 4.6 below captures results on the relationship between the size of family and its income level.

Table 4.6: Size of Family and Income of Household

		Income of Household ('000)										Total
		30-49.999	50-69.999	70-89.999	90-109.999	110-129.999	130-149.000	150-169.999	170-189.999	190-209.999	210 >	
Size of Family (members)	1	2	1	4	3	11	4	4	2	7	0	38
	2-4	1	6	6	3	12	6	6	2	15	0	57
	5-7	0	5	10	1	24	6	3	1	26	6	82
	8-10	0	2	0	1	3	2	3	0	2	1	14
	11-13	0	0	0	0	0	1	0	0	3	0	4
	> 13	0	1	0	0	0	0	0	0	0	0	1
Total		3	15	20	8	50	19	16	5	53	7	196

From Table 4.6 above, about 29% of the singles had an income of between sh.110,000-sh.129,999 followed by 18.42% in the income rage of sh. 190,000- sh. 209.999. Somewhat similar patterns were also evident amongst households with 2-4 members and 5-7 members. All other family sizes had a significant majority falling in these two income brackets. But as the size of the family increased, household income declined.

Table 4.7 below presents results on the relationship between the level of household expenditure and households' income. Generally, as household income levels rise, expenditure levels would rise too. Results in the table indicate that about a quarter of the households (50, 25.5%) generated monthly income of sh. 110,000-sh.129,000 while 53 of them generated monthly income of sh. 190,000-sh.209,000.

Table 4.7: Level of Household Expenditure versus Income of household

		Income of Household ('000)										Total
		30-49	50-69	70-89	90-109	110-129	130-149	150-169	170-189	190-209	210 or >	
House hold Expen diture	20,000-50,999	2	2	4	2	5	4	0	1	4	0	24
	51,000-80,999	0	7	11	1	16	5	4	2	6	2	54
	81,000-110,999	1	5	5	0	19	7	8	1	20	4	70
	111,000-140,999	0	1	0	3	6	3	4	1	14	1	33
	141,000-170,999	0	0	0	2	4	0	0	0	5	0	11
	171,000-200,999	0	0	0	0	0	0	0	0	2	0	2
	261,000 and >	0	0	0	0	0	0	0	0	2	0	2
Total		**3**	**15**	**20**	**8**	**50**	**19**	**16**	**5**	**53**	**7**	**196**

Results on Table 4.7 above indicate that most households spent up to sh. 140,999 in household expenditure per month. It appears that the prediction of a positive relationship between the two variables seems to hold in this study since most of the households fall in the lower half of the income spread same as for their expenditure.

Table 4.8 below shows the link between education levels and household income. Higher educational attainment has been linked to superior jobs which in turn generate higher income.

Table 4.8: Education Level of home owner versus Income of Household

		Income of Household ('000)										Total
		30-49.999	50-69.999	70-89.999	90-109.999	110-129.999	130-149.99	150-169.999	170-189.999	190-209.999	210>	
Education	Primary	0	1	0	0	0	0	0	0	0	0	1
	Secondary	0	1	3	0	4	3	2	0	0	0	13
	High School	1	4	2	0	9	1	1	1	8	0	27
	Cert.	0	1	8	3	10	0	4	3	2	0	31
	College	2	7	6	3	27	15	9	1	27	6	103
	University	0	1	1	2	0	0	0	0	16	1	21
Total		**3**	**15**	**20**	**8**	**50**	**19**	**16**	**5**	**53**	**7**	**196**

Results in Table 4.8 above indicate that most of the respondents (103, 52.55%) had attained college education but just a few (21, 10.72%) had a university education. Of those with college education, a significant majority (54, 27.55%) had a monthly income of sh. 110,000-sh.129.999 and sh. 190,000-sh.209,999. For those respondents with a university education, a significant majority (16, 76.19%) had a monthly income of between sh. 190,000 and sh. 209,999.

Table 4.9 below shows the relationship between size of the apartment house and the source of financing.

Table 4.9: Size of the House versus Source of Financing

		Financing			Total
		Cash	Mortgage	cash and Mortgage	
Size of the House	2 bedroom	7.7%	13.8%	12.8%	34.2%
	3 bedroom	10.2%	18.4%	17.9%	46.4%
	4 bedroom	1.5%	9.2%	8.7%	19.4%
Total		**19.4%**	**41.3%**	**39.3%**	**100.0%**

From Table 4.9 above, it was found that mortgage financing was the most popular source of financing for all the three clusters of households since 80.6% of the households used mortgage financing to buy their apartments. Considering that home ownership is quite expensive for most households, buying a house is often associated with mortgage financing.

4.6 Discussion of Cross Tabulation Findings

The relationship between gender of home owner and their age bracket indicates that most of the home owners were male and that majority of the respondents fell within the age bracket of 40-49. Hence, the study findings contradict those of Mundra and Oyelere (2013) who found that most apartment homes were owned by females and that households in the middle age brackets owned most of the apartments compared to their older counterparts; similarly, Beguy *et al.* (2010) found that mobility was high amongst the early adults. The study finding on age further contradicts Quegley and Weinberg (1977) and Rossi (1955) who both found that households headed by females shifted houses often compared to those headed by males. The study supports the findings of Doling (2008) and Quegley and Weinberg (1977) who both found that the older the household head, the lower the chances of buying a home or moving to a new environment.

The link between marital status and age of the home owners was also evaluated. It was found that a significant majority of those who had bought apartments fell in the 30-49 age bracket and that home ownership declined as age increased. Results of the study were found to indicate that the married owned most of the apartments (114, 58.16%). These findings were similar to Doling (2008) who found that in Italy, Greece, Portugal and Spain, older people had much lower housing mobility rates compared to the young adults. Quigley and Weinberg (1977) found that singles were less likely to initiate housing moves compared to the ever married- a finding which compares with this study. Fischer and Jaffe (2003) found that the probability of owning a home (in Spain) increased with age. However, the study findings on the respondents' age contradict those of Beguy *et al.* (2010) who found that household mobility rates were high at the age bracket of 20-24 in

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investigation of migration flows in Korogocho and Viwandani settlements in Nairobi City, Kenya.

The relationship between marital status of the home owners and their gender was also investigated. The study found that the male owned most of the apartment homes (130, 66.33%) compared to the female. The documented dominance by males in this study contradicts the findings Mundra and Oyelere (2013) who found that being female increased chances of owning a home. The study found that the married owned most of the apartment homes (114, 58.16%), a finding which corroborates Hood (1999) who indicates that marital status has a strong influence on home ownership.

The study further investigated the relationship between the size of family and the income of the household and found a negative relationship between the two. These findings were in tandem with Hood (1999) who similarly found that as the family size exceeded four, fewer families actually owned homes due their declining financial base. Conversely, both Rossi (1955) and Quigley and Weinberg (1977) found that increase in size of household increased household mobility rates.

The study evaluated the relationship between the educational levels and income of households. According to Hodd (1999), the highly educated individuals are bound to have higher incomes since they often maintain good jobs compared to the less educated. This proposition is in line with investment behaviour which supports a strong relationship between ones educational attainment and income. The study findings confirmed the proposition that higher educational attainment leads to a rise in income levels since a positive relationship was documented between the two variables. This finding was similarly supported by Beguy *et al.* (2010) and Fischer and Jaffe (2003) who both found that higher educational attainment was positively related to income of households.

The study further investigated the relationship between size of house and source of financing. It would be presumed that big size houses would be associated with a greater need for mortgage financing since they are much more expensive than smaller houses all

else constant. Citing a study conducted in 32 countries by Angel, Fischer and Jaffe (2003) found that the availability of mortgage financing had a significant influence on home ownership. This finding is corroborated by this study since it was found that more than two thirds of the respondents (80.6%) had actually financed their homes using mortgages with all the three clusters (2, 3 and 4 bedroomed apartment households) equally opting for mortgage financing. The option of using mortgage financing to buy a house is supported by Clayton (1998) who indicates that home ownership is expensive and the same would require mortgage financing. However, the study findings of a great need for mortgage financing in Nairobi County contradicts empirical evidence from the Kenyan market which documents very low levels of mortgage uptake. The Finscope Survey of 2009 only 1.5% of home owners had bought their houses using formal mortgage (Worldbank, 2011); the Central Bank of Kenya 2010 survey documents banks in Kenya lamenting of low mortgage uptake. Low mortgage penetration was also documented in Zambia by Arvanitis (2013).

4.7 Reliability Test

Reliability is concerned with the ability of an instrument to measure consistently and the accuracy and precision of questions included in the questionnaire (Tavakol & Dennick, 2011; Haper, 2002; Mc Daniel Jnr. & Gates, 2010). Reliability is often considered the first step in test validation process and the process captures the degree to which measures are free from random errors. Measurement errors can be attributed to three possible causes: respondent specific factors (like motivation, concentration, ignorance, fatigue, boredom, carelessness in filling the questionnaire among others), test specific factors (like the specific set of questions selected for a test, ambiguity in the questions, faulty tabulation, tricky questions among others) and scoring (specific factors such as non-uniform scoring guidelines, carelessness, counting and computational errors). Reliability can be improved by increasing the test length (the percentage of measurement error decreases as test length increases) and improving item quality through item discrimination (Wells & Wollack, 2003; Kothari, 2010).

Cronbach's Alpha is often used as the reliability coefficient for internal consistency (Wells & Wollack, 2003). Alpha was developed by Lee Cronbach in 1951 (Tavakol & Dennick, 2011). Cronbach's Alpha is considered a good measure of item homogeneity. Internal consistency is a necessary but not sufficient condition for measuring homogeneity in a sample of test items. And if the items in a test are correlated to each other, then the value of Alpha is increased. Cronbach alpha coefficients greater than 0.9 are often considered excellent, alphas greater than 0.8 are considered good, alphas of 0.7 are deemed acceptable, while alphas of 0.6 are questionable. An alpha of 0.5 is poor while one less than 0.5 is unacceptable (George & Mallery, 2003). The output of the reliability test for 18 items informing the study is presented 4.10 below.

Table 4.10: Reliability Statistics

Cronbach's Alpha	No. of Items
.568	18

Source: research data, 2014

Table 4.10 above shows an alpha coefficient (α) of 0.568 for the 18 items selected which is low despite meeting the minimum acceptance criteria of more than 0.50 set by George and Mallery (2003). However, Tavakol and Dennick (2011) contend that if multiple factors or traits underlie the items on a scale, alpha may end up underestimating the reliability of a test. A low value of alpha could also be due to a low number of questions, poor interrelatedness between items or heterogeneous constructs. But if a low alpha is due to poor correlation between items, then they could be revised or discarded. If the alpha is too high, this may suggest that some items are redundant since they are testing the same item but disguised differently (Tavakol & Dennick, 2011).

4.8 Tests for Normality and Linearity

The assumption of normality in the distribution of data was presumed to apply in this study considering that multiple regression analysis was used as the principal data analysis method. Normality tests can be carried out using Kolmogorov-Smirnov tests, Shapiro-Wilk test, Kurtosis and Skewness, Quantile-Quantile plots (Q-Q plots) and histograms (Saunders *et al.*, 2009; Field, 2005). Shapiro-Wilk test was used to test for normality in this study: the test becomes applicable when the sample size is between 3 and 2,000. Kolmogorov-Smirnov test becomes applicable when the sample exceeds 2,000.

Shapiro-Wilk test was published in 1965 by Samwel Sanford Shapiro and Martin Wilk with an objective of using the null hypothesis principle to check whether a sample came from a normally distributed population (Shapiro & Wilk, 1965). The Shapiro-Wilk test compares the scores in the sample to a normally distributed set of scores with the same mean and standard deviation. If the test is non-significant ($p > 0.05$), it means that the distribution of the sample is not significantly different from a normal distribution hence it is probably normal. Conversely, if the test is significant ($p < 0.05$), then the distribution in question is considered non-normal (Field, 2009).

Table 4.11 below presents the results of the test for normality for the study.

Table 4.11: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Demographics	.062	193	.072	.985	193	.041
Asymmetric Information	.058	193	.200[*]	.976	193	.002
Real Estate Investment Decisions	.184	193	.000	.947	193	.000
Housing Search	.077	193	.007	.957	193	.000

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Results in Table 4.11 above indicate that all the four items have a $p<0.05$. Hence, the significance conclusion implies that the sample appears to be non-normal. However, it is important to note that the validity of Shapiro-Wilk test can be weakened when the study sample is large: when you feed more data into the test, the likelihood of rejecting the null hypothesis increases. Considering the limitations of the Shapiro-Wilk test, it is highly recommended that there should be other tests carried out in addition to this test. Therefore, this study also adopted the Quantile-Quantile plots (Q-Q plots) for verification of normality in addition to the Shapiro-Wilk test. Hence, Figure 4.1 to Figure 4.4 below presents a visual expression of the expected and observed values with respect to the four variables of the study.

Linearity is examined through residual plots generated by residual plots drawn by the analysis software (SPSS). In this case, the distribution of points on the Q-Q plots can be viewed to check for linearity. For linearity to be in the affirmative, the points should be symmetrically distributed around the diagonal lines of each of the Q-Q plots with a fairly constant variance. Viewing Figures 4.1- 4.4 below confirms linearity since most of the points are fairly close to the diagonal lines of each figure and their variance seems fairly constant.

Figure 4.1 below presents a visual expression of the expected outcome on demographic characteristics versus the actual/observed outcome on the same.
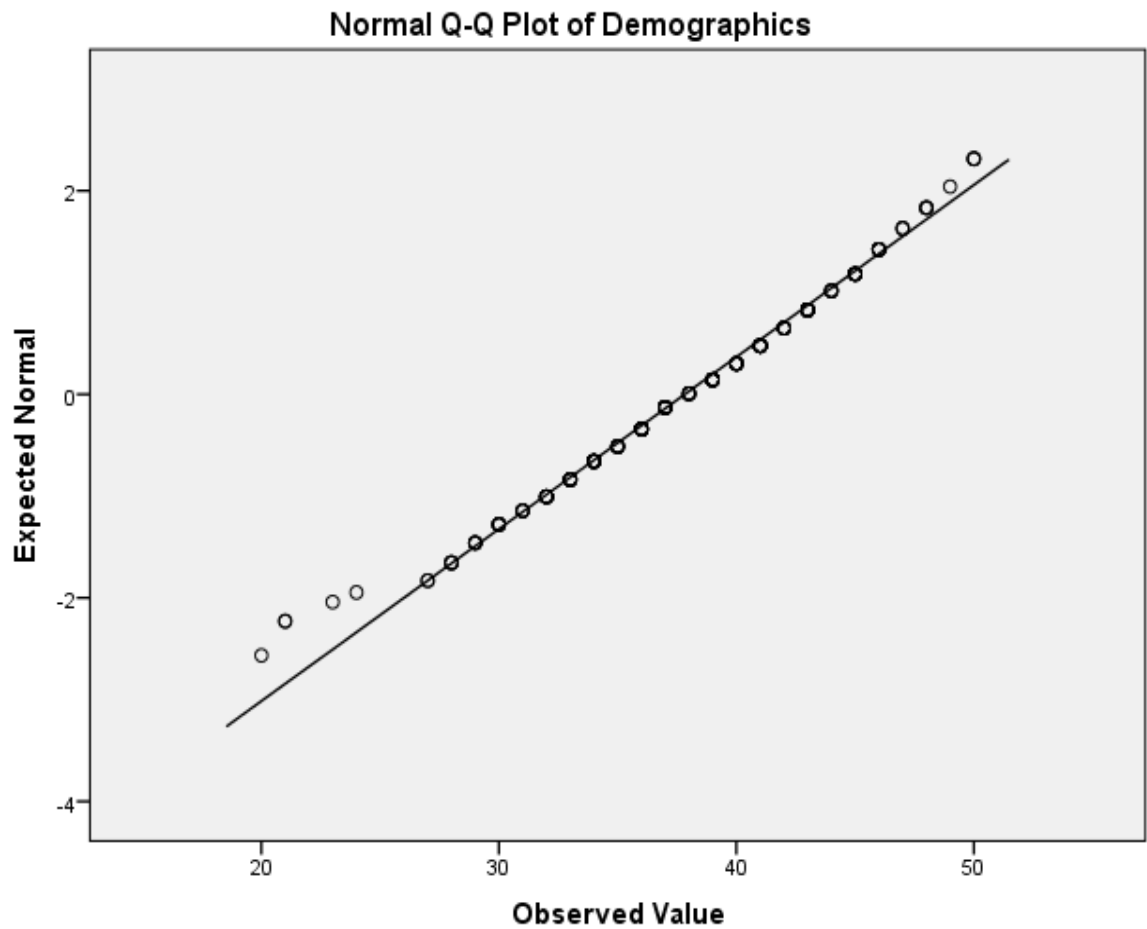
Figure 4.1: Demographics: Observed versus Expected Values

The visual presentation in Figure 4.1 above indicates that the observed values did not deviate so much from the expected values apart from a few items. Hence, the results are suggestive of normality.

Figure 4.2 below presents a visual expression of the expected outcome on the indicators of asymmetric information versus the actual/observed outcome on the same.
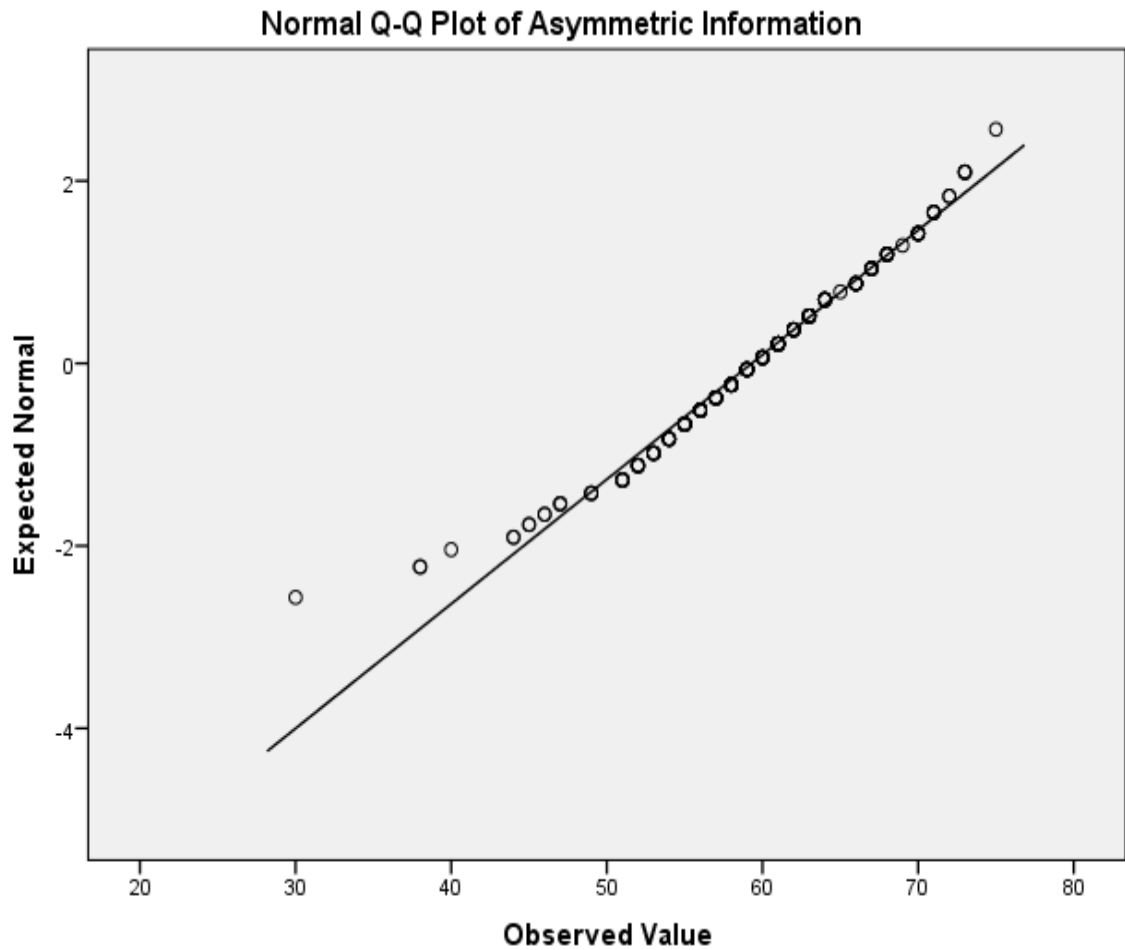
Figure 4.2: Asymmetric Information: Observed versus Expected Values

Visualization of Figure 4.2 above shows a strong link between the expected asymmetric information values and the observed characteristics on the same. Hence, it indicates that the observed values do not deviate much from the expected values apart from a few items. This finding indicates that the data could be normal.

Results in Figure 4.3 below present a visual expression of the expected outcome on the four real estate investment decisions versus the actual/observed outcome on the same.

Normal Q-Q Plot of Real Estate Investment Decisions
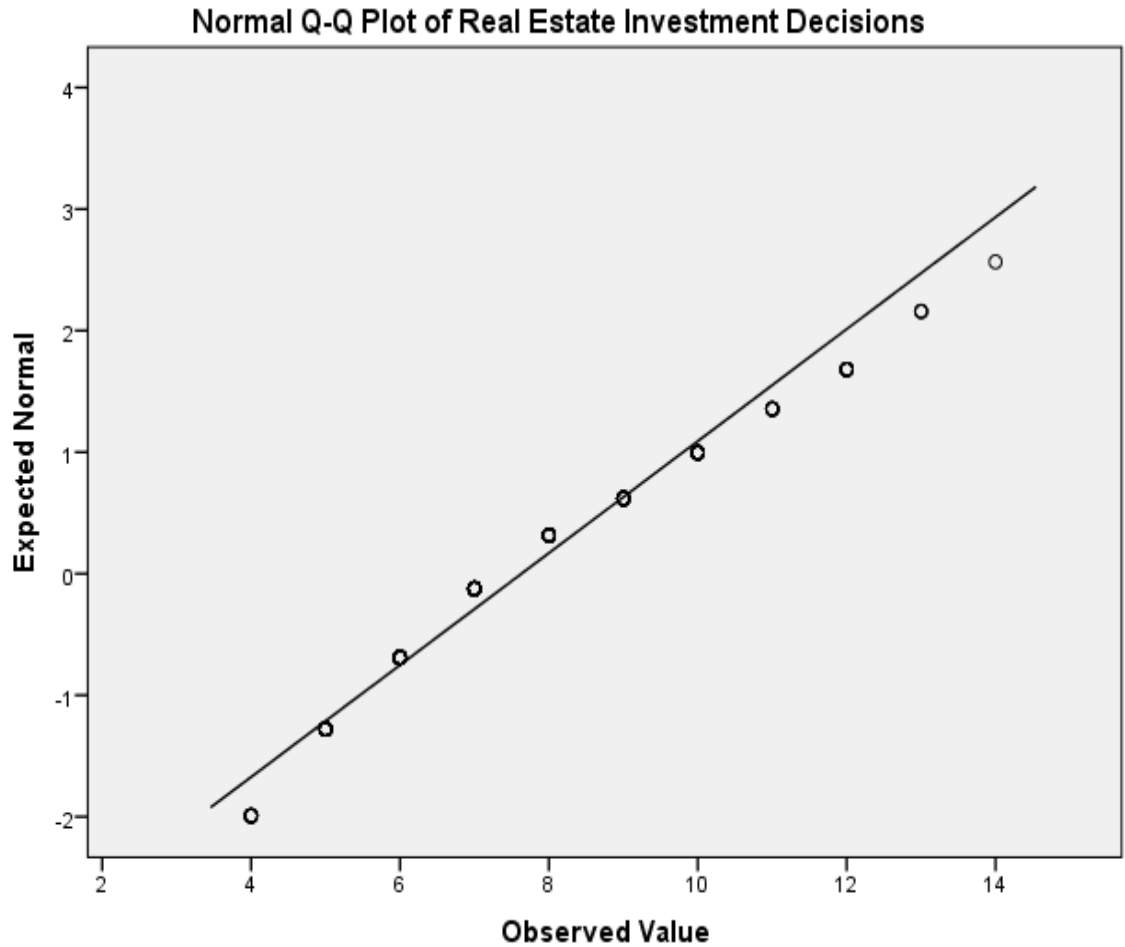
Figure 4.3: Real Estate Investment Decisions: Observed versus Expected Values

The results in Figure 4.3 above show the association between the real estate investment decision values and the observed/actual outcome on the same. This confirms that most of the observed values slightly deviate from the expected values apart from a few: this implies that the distribution could be non-normal distribution.

Results in Figure 4.4 below present a visual expression of the expected outcome on housing search effort and cost versus the actual/observed outcome on the same.
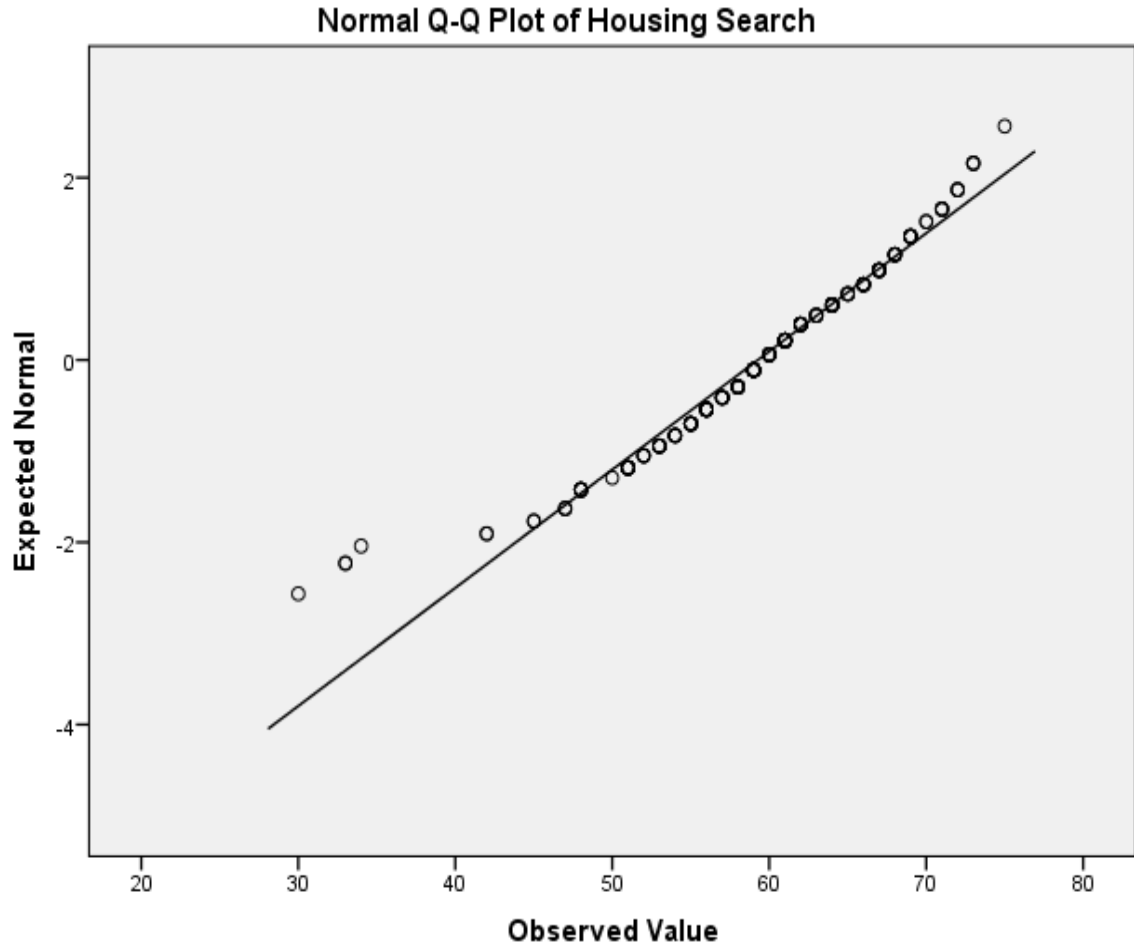
Figure 4.4: Housing Search: Observed versus Expected Values

Results on Figure 4.4 above indicate that the observed values of housing search effort and cost do not deviate quite much from the expected values apart from a few items. The above results indicate that the data could be normal.

4.9 Tests for Multicollinearity

Multicollinerity is the study of the relationship between independent variables in a study. It is also viewed as the absence of a strong correlation between two or more independent variables. Multicollinerity/collinearity permeates virtually every aspect of multiple regression analysis and has an adverse effect on such analysis especially if the correlation among independent variables is high (Aczel, 2009). A correlation matrix is the

conventional check for multicollinearity (Field, 2009). The matrix measures the nature and strength of relationship between the explanatory variables informing the study. In multiple regresssion analysis, the variables should not be highly correlated. In the event the variables are correlated, their correlation should not be perfect. According to Field (2005), multicollinearity becomes a problem if the correlations and in excess of 0.9. If this is the case, then a problem of multicollinearity exists. However, considering that the independent variables measure the same dimension in a study, the variables are expected to be related to some extent: a correlation of 0.3 is often the rule of thumb for purposes of multiple regression analysis. In the event of very high correlations, the researcher may consider to drop one of the variables (Saunders, *et al.,* 2009; Kothari, 2010).

The essence of computing correlation matrices for this study was to ascertain the nature and strength of the relationship between the study variables' independent factors. In addition, the correlation matrices communicate how the independent factors of the study influence one another and whether the associations meet the minimum threshold for multiple regrssson analysis ($r > 0.3$ and $r < 0.9$).

For purposes of correlation matrices in Table 4.12 and Table 4.13, the following abbreviations were used: gender (gend.), marital status (status), size of family (size), occupation (occpn.), educational level (educ.), income of household (inc.), household composition (compo.), level of household expenditure (expe.), experience (expr), expertise (expt) number of visits (visits), cost of inspection of valuation (cost), search for true value (value), time devoted in searching (time), reading property magazines, journals and billboards (reading), number of neighbourhoods searched (neiba), number of mortgage financiers contacted for financing (Fin.), anchoring bias (anchoring), safety of apartment and area (safety) and average distance covered in searching (distance). The Pearson's Simple Correlation Coefficient will be represented by Pearson's simple correlation (r).

Table 4.12: Correlations Matrix for Demographic Characteristics

Table 4.12: Correlations Matrix for Demographic Characteristics		Gend.	Age	Status	Size	Occpn.	educ.	Inc.	Compo.	Expe.	Expr	Expt	Origin
Gender	Pearsons (r)	1											
	Sig. (2-tailed)												
Age	Pearsons (r)	.059	1										
	Sig. (2-tailed)	.413											
Status	Pearsons (r)	.056	.298**	1									
	Sig. (2-tailed)	.433	.000										
Size	Pearsons (r)	-.055	.350**	.183*	1								
	Sig. (2-tailed)	.448	.000	.010									
Occptn.	Pearsons (r)	-.079	.041	.060	.042	1							
	Sig. (2-tailed)	.271	.565	.406	.558								
Educ.	Pearsons (r)	-.066	-.036	.124	-.021	.244**	1						
	Sig. (2-tailed)	.359	.619	.084	.768	.001							
Inco.	Pearsons (r)	-.200**	-.111	-.122	.106	.195**	.144*	1					
	Sig. (2-tailed)	.005	.121	.088	.138	.006	.044						
Compo.	Pearsons (r)	-.143*	-.001	-.048	-.012	.102	.307**	.079	1				
	Sig. (2-tailed)	.046	.991	.508	.869	.154	.000	.273					

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Expe.	Pearsons (r)	-.009	-.021	-.049	.148*	.333**	.174*	.328**	.095	1			
	Sig. (2-tailed)	.900	.773	.496	.038	.000	.015	.000	.188				
Experience	Pearsons (r)	.027	.185**	.115	.141*	.096	-.004	-.056	.120	.228**	1		
	Sig. (2-tailed)	.707	.010	.108	.048	.182	.960	.435	.095	.001			
Expertise	Pearsons (r)	.066	.180*	.067	-.033	.081	-.052	-.063	-.009	-.072	.111	1	
	Sig. (2-tailed)	.355	.011	.353	.641	.260	.467	.383	.896	.318	.122		
Origin	Pearsons (r)	-.068	.122	.012	.209**	-.003	.066	.056	-.058	.135	-.090	.020	1
	Sig. (2-tailed)	.348	.090	.863	.003	.972	.358	.436	.418	.059	.210	.782	

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed).

In the correlation matrix on Table 4.12 above, there are both positive and negative correlations between the demographic characteristics. The table shows several negative correlations between the independent items; it also captures several positive correlations ranging between 0.3 and 0.9. Only one correlation (between experience and composition of household) is in excess of the maximum 0.90). Hence, the respondent demographic characteristics meet the threshold for multiple regression analysis and that there appears to be no excessive multicollinearity amongst the household demographic characteristics.

The correlation matrix in Table 4.13 below presents the nature and strength of relationship between the housing search independent factors.

Table 4.13: Correlation Matrix for Housing Search

		Visits	Cost	Value	Time	Reading	Neiba	Financiers	Anchoring	Safety	Distance
Visits	Pearsons (r)	1									
	Sig. (2-tailed)										
Cost	Pearsons (r)	.261**	1								
	Sig. (2-tailed)	.000									
Value	Pearsons (r)	-.010	-.083	1							
	Sig. (2-tailed)	.884	.251								
Time	Pearsons (r)	-.045	.173*	.310**	1						
	Sig. (2-tailed)	.534	.016	.000							
Reading	Pearsons (r)	.130	.747**	.065	.458**	1					
	Sig. (2-tailed)	.071	.000	.368	.000						
Neiba	Pearsons (r)	.666**	.255**	-.057	-.044	.128	1				
	Sig. (2-tailed)	.000	.000	.431	.539	.076					
Fin.	Pearsons (r)	-.116	-.006	.169*	-.026	-.042	-.011	1			
	Sig. (2-tailed)	.105	.929	.018	.722	.566	.877				
	Sig. (2-tailed)	.059	.300	.419	.709	.701	.986	.000			
Safety	Pearsons (r)	.002	-.130	.395**	-.019	-.095	.094	.491**	.259**	1	
	Sig. (2-tailed)	.978	.072	.000	.793	.190	.189	.000	.000		
Distance	Pearsons (r)	-.142*	.120	.485**	.421**	.333**	-.143*	.109	.058	.204**	1
	Sig. (2-tailed)	.048	.095	.000	.000	.000	.045	.129	.420	.004	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

In Table 4.13 above, there are several positive and negative correlations among the independent housing search factors. Out of the 9 independent items in the table, only 3 violate the maximum threshold of 0.9. Despite this observation, in overall, there appears to be no excessive multicollinearity amongst the housing search independent items.

Results of multicollinearity check for asymmetric information are presented in Table 4.14 below.

Table 4.14: Correlation Matrix for Asymmetric Information

		Moral Hazards	Adverse Selection	Heuristics	Biased Beliefs	Anchoring Bias
Moral	Pearson Correlation	1				
Hazards	Sig. (2-tailed)					
Adverse	Pearson Correlation	.191**	1			
Selection	Sig. (2-tailed)	.008				
Heuristics	Pearson Correlation	-.035	.234**	1		
	Sig. (2-tailed)	.628	.001			
Biased	Pearson Correlation	.014	-.114	.227**	1	
Beliefs	Sig. (2-tailed)	.848	.113	.001		
Anchoring	Pearson Correlation	-.150*	.042	.048	.220**	1
Bias	Sig. (2-tailed)	.036	.560	.502	.002	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

In Table 4.14 above, there are several positive correlations among the independent factors that constitute asymmetric information and only 3 of the factors have a negative correlation. Only one factor (biased beliefs) has a strong positive correlation with moral hazards (r= 0.848) which is still below the maximum threshold of 0.9. All the other factors remain within the normal range. Hence, there appears to be no excessive multicollinearity between the asymmetric information independent items.

Table 4.15 below presents the multicollinearity check for the four real estate investment decision choices.

Table 4.15: Correlation Matrix for Real Estate Investment Decisions

		Choice of Neighbourhood	Choice of Location of House	Size of House	Source of Financing
Choice of Neighbourhood	Pearson Correlation	1			
	Sig. (2-tailed)				
Choice of Location of House	Pearson Correlation	.325**	1		
	Sig. (2-tailed)	.000			
Size of the House	Pearson Correlation	.160*	.169*	1	
	Sig. (2-tailed)	.025	.018		
Source of Financing	Pearson Correlation	.113	.146*	.115	1
	Sig. (2-tailed)	.115	.041	.108	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Considering that the four types of decision choices are quite independent of one another, Table 4.15 above confirms the hypothesized expectation of low correlations between the decision choices. In the absence of any correlation being in excess of 0.9, it is concluded that there is no excessive multicollinearity between the four decision choices.

The study also conducted a composite correlation of all the variables that is all the independent factors for each decision type were grouped together into one composite. The results on the same are presented in Table 4.16 below.

Table 4.16: Composite Correlations

Correlations		Housing Search	Real Estate Investment Decisions	Asymmetric Information	Demographics
Housing Search	Pearson Correlation	1			
	Sig. (2-tailed)				
Real Estate Investment Decisions	Pearson Correlation	.006	1		
	Sig. (2-tailed)	.932			
Asymmetric Information	Pearson Correlation	.933[**]	.002	1	
	Sig. (2-tailed)	.000	.980		
Demographics	Pearson Correlation	-.057	.155[*]	-.091	1
	Sig. (2-tailed)	.429	.031	.208	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4.16 above shows both positive and negative correlations between the composites of the study variables. Only 3 out of the 12 correlations are in excess of the maximum correlation of 0.9. Therefore, there appears to be no excessive multicollinearity among the variables in overall when the study variables are taken as composites.

4.10 Homoscedasticity and Heteroscedasticity

Homoscedasticity is the assumption of equal standard deviations of Y values about the population regression line, regardless of the value of X. Homoscedasticity is the extent to which the data values for the dependent and independent variables have equal variances (Weirs, 2008). However, if the variances happen to be unequal, then heteroscedasticity exists. However, even if heteroscedasticity exists, one can still carry out regression analysis since this does not bias the ordinary least square regression coefficients (Saunders *et al.,* 2009). Hence, regression analysis using heteroscedastic data will still provide unbiased results for the relationship between the predictor and independent variables. Econometrician Robert Engle won the 2003 Nobel Memorial Prize for Economics for his studies on regression analysis in the presence of heteroscedasticity.

The Levene's Test is an inferential statistic used to assess the quality of variances for a variable calculated for two or more groups. Most statisticians would recommend Levene's test since it is less sensitive to departures from normality unlike Bartlett's Test. The former test is used to test if k samples do have equal variances (homogeneity of variance or homoscedasticity). The Levene test is meant to test the null hypothesis that the population variances are equal. If the P-value of Levene's test is less than the significance level, then the null hypotheses of equal variance is not supported meaning that there is a difference between the variances in the population (Levene, 1960). For purposes of this study, homegeneity of Variance (homoscedasticity) was tested using Levene's test whose results are shown in Table 4.17 below.

Table 4.17: Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Asymmetric Information	1.843	23	165	.015
Real Estate Investment Decisions	2.150	23	167	.003
Housing Search	1.704	23	165	.030

Statistically, Field (2009) indicates that the variance ratio of Levine test statistic should be about 2 or 3 that is the average of the highest and the lowest Levene statistic. In view of the same, the variance ratio computed from Table 4.17 above shows that the variance ratio was 1.927, which is about 2 hence homogeneity of variance.

4.11 Factor Analysis

The results of Bartlett's test of Sphericity form the precursor for factor analysis. If the Bartlett's test of Sphericity is significant ($p < 0.05$), then one has to consider factor analysis. Table 4.23 shows the results of Bartlett's test of Sphericity ($p = 0.000$) and with $p < 0.05$ it became necessary for the study to carry out factor analysis. The essence of factor analysis is to reduce the many study factors into a smaller number of manageable factors. Principal Component Analysis is often used to facilitate the appreciation of how a set of study variables are structured besides reducing a data set into a more manageable size while retaining the original information (Kothari, 2010; McDaniel Jr. & Gates, 2010: Field, 2005).

Factor analysis could be explanatory or confirmatory. The former helps in discovering if the original variables are organized in a particular way hence reflecting another 'latent variable' while the latter confirms a belief about how the original variables are organized. The two are interdependent since what is initially explanatory factor analysis ends up becoming a confirmatory (Beaumont, 2012). Factor analysis was carried out following the following steps: computation of descriptive statistics, collinearity checks, KMO and Bartlett's tests, Table of communalities, Total variance explained, Scree plots, Component matrix, Rotated component matrix then the naming of factors.

4.11.1 Descriptive Statistics from Factor Analysis

The first output from factor analysis is a table of descriptive statistics for all variables in a study. Hence, using descriptive statistics, the importance of factors were summarized into tables representing each of the variables as shown below; in addition, the output shows the coefficient of variation which is the risk for every one unit of the item being measured. Table 4.18 below presents the total number of valid cases (N), the means of each independent factor and the spread of each household demographic characteristic about the mean.

Table 4.18: Demographic characteristics

	N	Mean	Std. Deviation	Coefficient of Variation
Age	196	2.67	.874	.33
Marital Status	196	2.11	.902	.43
Size of Family	196	2.45	.983	.40
Occupation/profession	196	4.30	1.978	.46
Education Level	196	4.58	1.276	.28
Income of Household	196	6.06	2.482	.41
Household Composition	196	2.84	.917	.32
Level of Household Expenditure	196	2.85	1.266	.44
Experience with Housing Market	196	2.77	.930	.34
Expertise in Real Estate Matters	196	2.05	.941	.46

From Table 4.18 above, income of the household emerged as the most important demographic characteristic since it had the highest mean score of 6.06 compared to all the other demographic characteristics though age had the lowest coefficient of variation of 0.33. The lower the coefficient of variation the smaller the variation between the actual outcome and expected values.

Table 4.19 below presents the number of valid cases (N), mean scores of each housing search independent factor and the spread of each of the factors about the mean.

Table 4.19: Housing Search

	N	Mean	Std. Deviation	Coefficient of Variation
Number of Visits Made to Various Apartments	196	16.3367	2.69451	.16
Cost of Property Inspection and Property Valuation	194	7.8969	2.02054	.26
Search for true value of apartment	196	3.8367	1.31417	.34
Time devoted by home buyer in searching	196	3.7500	1.29842	.35
Reading Real property magazines, Journals and billboards	194	7.7990	2.13187	.27
Number of Neighborhood Actively Searched	196	4.1378	1.00583	.24
Number of Mortgage financiers contacted for financing	196	3.8163	1.39116	.36
Safety of the Apartment and the Area	196	7.8724	2.35319	.30
Average Distance Covered while searching	196	3.7806	1.39149	.37

From Table 4.19 above, from the housing search effort and cost incurred by households, the number of visits made to various apartments emerged as the most important housing search characteristic since it had the highest mean score of 16.3367 and the lowest coefficient of variation of 0.16 compared to all other housing search indicators.

Table 4.20 below captures the number of valid cases (N), the mean scores of each asymmetric information independent factor and the spread of each factor about the mean.

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Table 4.20: Asymmetric Information

	N	Mean	Std. Deviation	Coefficient of Variation
Moral Hazards by Sellers and Property Agents	196	12.2500	2.18239	.18
Adverse Selection Problems on the Part of buyers	194	11.9845	2.68459	.22
Heuristics	196	11.3571	3.13704	.28
Biased Beliefs	196	11.7092	3.11524	.27
Anchoring Bias	196	11.9541	3.05890	.26

The results in Table 4.20 above indicate that moral hazards by sellers and real property agents was the most important asymmetric information indicator for this study with a mean score of 12.2500 besides recording the lowest coefficient of variation of 0.18.

Table 4.21 below presents the number of valid cases (N), the mean score of each of the four real estate investment decision type and the spread of each decision about the mean score.

Table 4.21: Housing Decisions

	N	Mean	Std. Deviation	Coefficient of Variation
Choice of Neighbourhood	196	1.74	.869	.50
Choice of Location of House	196	1.84	1.088	.59
Size of the House	196	1.86	.742	.40
Source of Financing	196	2.21	.768	.35

Table 4.21 above indicates that source of financing was the most important real estate investment decision type that households had to make out of all the four decisions since it had the highest mean score of 2.21 compared with all the other decision types besides having the lowest coefficient of variation of 0.35.

4.11.2 Multicollinearity Check

For purposes of factor analysis, Correlation Matrices, Tolerance and Variance Inflation Factors are used as the standard checks for multicollineariy. Developing a correlation matrix is often the prerequisite for multicollinearity/ collinearity checks in factor analysis. High or extreme multicollinearity is indeed a problem in factor analysis (Field, 2005). The correlation matrices (in Table 4.12 to Table 4.16 above) form the conventional approach to checks for multicollinearity. The tables show several positive correlations between the independent variables (most of them ranging between 0.3 and the threshold of 0.9). Only a few of the correlations are in excess of 0.9 hence there seems not to be excessive multicollinearity. Since the majority of correlations in Table 4.12 to Table 4.16 range between 0.3 and 0.9, it confirms that there is commonality between the study variables supporting the use of factor analysis.

Besides the use of Correlation matrices, Tolerance and Variance Inflation Factor (VIF) are also used to check for multicollinearity. Table 4.22 below captures the collinearity statistics for the study. VIF quantifies the severity of multicollinearity in regression studies. O'Brien (2007) acknowledges that Tolerance and VIF are the widely used measure of the degree of multicollinearity in regression model. Tolerance is the amount of variability of the selected independent variable not explained by the other independent variables. It is computed by making each independent variable a dependent variable and regressing it against the remaining independent variables. A tolerance value that approaches zero indicates that the variable is highly collinear with the other predictor variables. Citing Menard (1995), O'Brien (2007) indicates that a tolerance of less than 0.20 is a cause for concern and a tolerance of less than 0.10 almost certainly indicates serious collinearity problem. O'Brien further indicates that when the VIF is high, it means excessive multicollinearity which by extension it questions the results of the analysis.

Tolerance and VIF results for the study are presented in Table 4.22 below.

Table 4.22: Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Asymmetric Information	.991	1.009
	Demographics	.964	1.037
	Housing Decisions	.972	1.028

Dependent Variable: Housing Search

Denis (2011) contends that Variance Inflation Factors (VIFs) of 5 and higher should be a concern for further investigation since this would necessitate the reduction of predictors in the model. Field (2009) indicates that the rule of thumb for VIF is 4 or 10. A VIF of 10 indicates (all other things being equal) that the variance of ith regression coefficient is 10 times greater than it would have been if the ith independent variable had been linearly independent of the other independent variable in the analysis. Hence, it indicates how much the variance has been inflated by this lack of independence (O'Brien, 2007). According to Denis (2011), a large tolerance value indicates a lesser problem with collinearity. Tolerance values approaching zero indicates that the variable is highly collinear with the other predictor variables. In view of the Denis' VIF thereshold of 5 and his recommendations for higher Tolerance values, the study variables (as presented in Table 4.22 above) pass the VIF and Tolerance tests of no excessive collinearity. Hence, none of the study variables required further investigation.

4.11.3 Kaiser-Meyer-Oklin (KMO) measure and Bartlett's Test of Sphericity

Computing KMO and Bartlett's test of Spehricity is the third step in factor analysis. KMO is a measure of sampling adequacy while the Bartlett's Test of Sphericity measures the relationships between the study variables. KMO statistic varies between 0 and 1. Based on Kaiser (1974), KMO values of greater than 0.5 should be accepted. This is supported by Field (2005) who indicates that if the sample is adequate, the value of KMO

should be greater than 0.5. KMO values of zero indicate that the sum of partial correlations is large relative to the sum of correlations, indicating diffusion in the pattern of correlations. Hence, factor analysis will be inappropriate in this event.

The results of the two measures are presented in Table 4.23 below.

Table 4.23: KMO Measure and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.535
Bartlett's Test of Sphericity	Approx. Chi- Square	301.724
	Df	91
	Sig.	.000

From the results contained in Table 4.22c above, the study supports the results of KMO for this study (0.535) since they meet the minimum threshold of 0.50. This confirmed that the sample size for the study was indeed adequate.

The Bartlett's test of Sphericity is an indication of the strength of the relationship among variables. It tests the null hypothesis that the correlation matrix is an identity matrix (Cattell, 1966). For factor analysis to be value additive there should be some relationship between research variables. Hence, factors analysis becomes appropriate when Bartlett's test is significant that is p<0.05. Considering Table 4.23 indicates p<0.05 (p=0.000), the significance conclusion means that null hypothesis is not supported. Hence, the correlation matrix is not an identity matrix. Consequently, factor analysis was carried out since Bartlett's test of Sphericity was significant.

4.11.4 Communality, Eigen Values and Factor Loadings

Communality (h^2) shows how much of each variable is accounted for by the underlying factors taken together; a high value of communality indicates that not much of the variable is left over after whatever the factors represented are taken into consideration. A communality table shows how much of variance in the variables has been accounted for by the extraction (Kothari, 2004). The table shows the variation of one item in terms of

all items. Before extraction, the communalities are all supposed to be 1 (as shown in Table 4.24 below).

Table 4.24: Table of Communality

	Initial	Extraction
Gender	1.000	.592
Age	1.000	.616
Marital Status	1.000	.569
Size of Family	1.000	.714
Occupation	1.000	.573
Education Level	1.000	.646
Income of Household	1.000	.667
Household Composition	1.000	.717
Level of Household Expenditure	1.000	.757
Experience with Housing Market	1.000	.776
Expertise in Real Estate Matters	1.000	.563
Region Affiliation	1.000	.697
Number of Visits Made to Various Apartments	1.000	.917
Cost of Property Inspection and Property Valuation	1.000	.923
Search for true value of apartment	1.000	.758
Time devoted by home buyer in searching	1.000	.761
Reading Real property magazines, Journals and billboards	1.000	.846
Number of Neighborhood Actively Searched	1.000	.681
Number of Mortgage financiers contacted for financing	1.000	.807
Safety of the Apartment and the Area	1.000	.787
Average Distance Covered while searching	1.000	.729
Moral Hazards by Sellers and Property Agents	1.000	.898
Adverse Selection problems	1.000	.914
Heuristics	1.000	.953
Biased Beliefs	1.000	.931
Anchoring Bias	1.000	.818
Choice of Neighbourhood	1.000	.746
Choice Location of House	1.000	.652
Size of the House	1.000	.425
Source of Financing	1.000	.455
Extraction Method: Principal Component Analysis.		

Table 4.24 above shows high communality values for most of the independent items meaning that the variation in the listed independent items is largely explained by the other factors. Apart from size of apartment house and source of financing, all the other independent items have extraction values of greater than 0.50 which is the recommended minimum.

Eigen values and the concept of loading account for the total variance explained. Eigen values indicate the relative significance of each factor in accounting for a particular set of variables that the researcher is analyzing. Factor loadings (also known as factor-variable correlations) are those values which explain how closely the variables are related to each one of the factors discovered and they help in understanding what the factors mean. It is the absolute size of the loadings that matters more in the interpretation of the factor and not whether the sign is positive or negative. With factor scores, one can actually perform several other multivariate analyses such as multiple regression analysis, cluster analysis, Multiple Discriminant Analysis among others (Kothari, 2004; Field, 2005).

Table 4.25 below captures the Eigen Values and Total Variance Explained for the study.

Table 4.25: Eigen Values and Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumula tive %	Total	% of Variance	Cumlative %	Total	% of Variance	Cumlative %
1	4.606	14.858	14.858	4.606	14.858	14.858	3.502	11.298	11.298
2	3.518	11.349	26.207	3.518	11.349	26.207	3.040	9.807	21.106
3	2.685	8.660	34.866	2.685	8.660	34.866	2.951	9.519	30.625
4	2.175	7.017	41.883	2.175	7.017	41.883	2.804	9.045	39.669
5	1.858	5.994	47.877	1.858	5.994	47.877	1.741	5.617	45.286
6	1.756	5.665	53.542	1.756	5.665	53.542	1.603	5.172	50.458
7	1.654	5.336	58.878	1.654	5.336	58.878	1.509	4.869	55.328
8	1.233	3.978	62.855	1.233	3.978	62.855	1.489	4.804	60.132
9	1.201	3.873	66.728	1.201	3.873	66.728	1.468	4.736	64.867
10	1.129	3.640	70.368	1.129	3.640	70.368	1.381	4.454	69.321
11	1.054	3.401	73.769	1.054	3.401	73.769	1.379	4.448	73.769
12	.952	3.071	76.840						
13	.770	2.484	82.163						
14	.734	2.367	84.529						
15	.657	2.119	86.649						
16	.597	1.926	88.575						
17	.585	1.889	90.463						
18	.506	1.633	92.096						

19	.468	1.508	93.605						
20	.440	1.418	95.023						
21	.368	1.187	96.210						
22	.360	1.162	97.372						
23	.307	.990	98.363						
24	.224	.723	99.085						
25	.204	.658	99.743						
26	.070	.225	99.968						
27	.010	.032	100.000						
28	1.919 E-016	6.191E-016	100.000						
29	8.699 E-017	2.806E-016	100.000						
30	- 7.680 E-016	-2.477E-015	100.000						

Extraction Method: Principal Component Analysis.

From Table 4.25 above, out of the 30 independent items explaining the variation in the study, only 11 items have Eigen values greater than 1 in line with Kaiser (1960) recommendation of only considering those factors with Eigen values greater than 1. In particular, the 11 factors account for 73.769% variation in the study.

After factor extraction, the key decision to make is the number of factors to retain. One can opt to either use the Kaiser's Eigen Value-greater-than-one rule or use Catell's Scree plots which were introduced by Catell (1966). The latter involves the use of visual analysis of a graphical representation of the Eigen values which are presented in a descending order. One would simply look at the plot and determine the point at which the last significant drop or break takes place/where the line levels off since at this point the important/major factors are divided from the trivial/minor factors (see Figure 4.5). Scree plots help determine how many factors should be retained in an analysis such as Principal Component Analysis or Factor Analysis: the concept plots the Eigen values in a descending order and eventually indicates the point of inflection on the curve (Field, 2005).

This study adopted the Kaiser's Eigen-Values-greater-than-one (K1) rule in selecting the important factors accounting for much of the total variation in the study. Hence, Table 4.25 identifies 11 key factors (explaining 73.769% of variation in the study). This is in

accordance with Kaiser (1960) rule which states that only the factors that have Eigen values greater than 1 are to be retained for interpretation (Ladesma & Valero-Mora, 2007; Field, 2005). A further visualization of the 11 factors is presented below using the Scree Plots in Figure 4.5. Considering that the Scree Plot curve takes a significant dive where there is component 11 (and the Eigen Values begin to drop below 1 at this point), it confirms the results in Table 4.25 that indeed, 11 factors account for much of the variation in the study.

4.11.5 Scree Plots, Component Matrices and Rotation

The Scree plot below is a visual presentation that corroborates the selection of 11 factors as shown in Table 4.25 above.
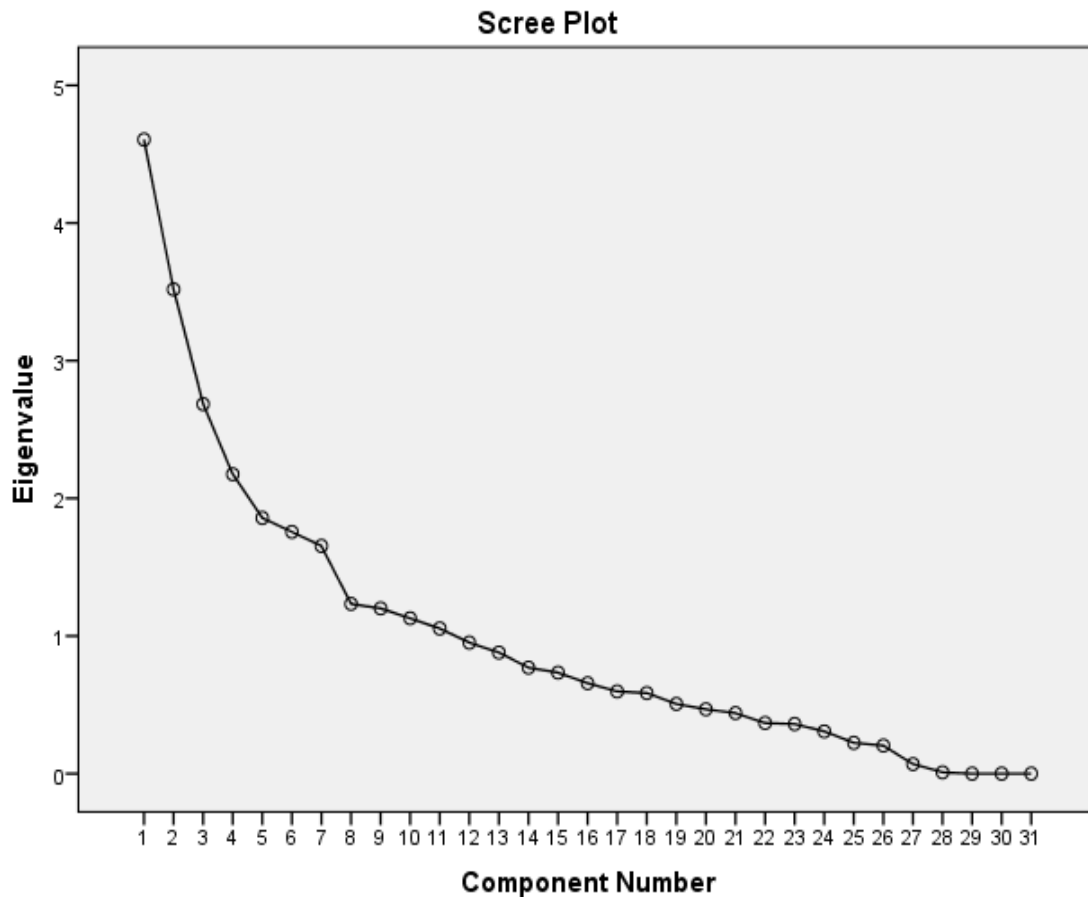
Figure 4.5: Scree Plot

The Component Matrix Diagram represented in Table 4.26 below. The higher the absolute value of the loading, the more the factor contributes to the variable.

Table 4.26: Component Matrix[a]

	Component										
	1	2	3	4	5	6	7	8	9	10	11
Gender											
Age						.651					
Marital Status						.527					
Size of Family						.658					
Occupation/Profession											
Education Level							-.541				
Income of Household											
Household Composition											
Level of Household Expenditure											
Experience with Housing Market											
Expertise in Real Estate Matters							.571				
Region Affiliation								.614			
No. of Visits to apartments		.696	.534								
Cost of Property Inspection & roperty Valuation	.543	.519									
Search for true value of apartment	.535										
Time devoted by home buyer in searching	.577										
Reading Real property magazines, ournals and billboards	.679										
No. of Neighborhood searched		.573	.514								
No. of financiers contacted											
Safety of the Apartment & area		-.508	.552								
Average Distance Covered while earching	.621										
Moral Hazards (Sellers & agents)		.625	.580								
Adverse Selection (by buyers)	.516	.582									
Heuristics	.781										
Biased Beliefs	.549	-.541	.516								
Anchoring Bias											
Choice of Neighbourhood											
Choice Location of House											
Size of the House											
Source of Financing											

Extraction Method: Principal Component Analysis.

11 components extracted.

The Component Matrix above (Table 4.26) explains the loading of the independent items into the 11 factors. For instance, factor 1 has 8 independent items loading into it while item 6 has 3 independent items loading into it. Loadings less than 0.5 were purposely excluded based on the recommendation by Kaiser (1960) who advocates for loadings of more than 0.5 regardless of whether the sign is positive or negative since the absolute values of the loading is what matters more.

Rotation has an effect of optimizing/maximizing the relationship between the variables and some of the factors; it also improves interpretability of the factors. For equalization purposes, rotation was performed to yield the component matrix. This was achieved through the Varimax with Kaiser Normalization. Principal Component Analysis can be used for extraction. Rotation enhances the process of interpretability of factors; rotation maximizes the loading of each variable on one of the extracted factors whilst minimizing the loading on all other factors (Field, 2005). Rotation has an effect of optimizing the factor structure and it equalizes the relative importance of the specific factors chosen (that is 11 factors for this study).

Table 4.27: Rotated Component Matrix[a]

	Component										
	1	2	3	4	5	6	7	8	9	10	11
Gender											
Age					.748						
Marital Status					.639						
Size of Family					.665						
Occupation/Profession											
Education Level							.734				
Income of Household								.789			
Household Composition							.763				
Level of Household Expenditure											.662
Experience with Housing Market											.728
Expertise in Real Estate Matters											

	1	2	3	4	5	6	7	8	9
Region Affiliation								.795	
Number of Visits Made to Various Apartments			.930						
Cost of Property Inspection and Property Valuation		.943							
Search for true value of apartment	.692								
Time devoted by home buyer in searching	.771								
Reading Real property magazines, Journals and billboards		.768							
Number of Neighborhood Actively Searched			.768						
Number of Mortgage financiers contacted for financing				.887					
Safety of the Apartment and the Area				.657					
Average Distance Covered while searching	.789								
Moral Hazards by Sellers and Property Agents			.936						
Adverse Selection problems		.908							
Heuristics	.898								
Biased Beliefs				.591					
Anchoring Bias				.841					
Choice of Neighbourhood					.790				
Choice of Location of House					.696				
Size of the House									
Source of Financing								.654	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a.   Rotation converged in 24 iterations.

The factor loadings are like a simple correlation between a variable and a factor. Rotations are useful since they reveal different structures in the research data. If a factor is only explained by a single variable, then that variable becomes the factor. From Table 4.27 above, there is an indication that most of the variables have a significant positive correlation with the respective factors that they are loaded into.

McDaniel Jr. and Gates (2010) indicate that naming factors is a somewhat subjective step which combines intuition and knowledge of the variables with an inspection of variables that have high loadings on each other. However, some consistency exists among the variables that load highly on a given factor. Hence, the study named the 11 factors (as shown in Table 4.28 below) bearing in mind the McDaniel Jr. and Gates (2010) advise.

Table 4.28: Naming of Factors

No.	Variables (independent items)	Factor
1	Search for true value of property, time devoted in searching, average distance covered in searching and heuristics.	Information constraint and its outcome
2	Cost of property inspection and valuation, reading magazines, journals and billboards and adverse selection on the part of buyers.	Information search and its costs
3	Number of visits made to view various apartments, number of neighbourhoods actively searched, and moral hazards on the part of sellers and property agents.	Physical search and malpractices
4	Number of mortgage financiers contacted for financing, safety of apartment and area, biased beliefs and anchoring bias.	Financing and information disadvantage
5	Age, marital status and size of family.	Family characteristics
6	Choice of neighbourhood and choice of location of house.	Housing environment
7	Educational level and household composition.	Academics and profiling
8	Income of household.	Income
9	Source of financing.	Financing
10	Region of affiliation.	Origin
11	Level of household expenditure and experience with housing market.	Spending and experience

Source: research data, 2014

4.11.6 Summary of findings from factor analysis

Upon conducting factor analysis, the study found that 11 factors (generated out of 30 independent items) accounted for 73.769% of variation in the study. The independent items which were grouped into the 11 factors include: search for true value of property, time devoted in searching, average distance covered in searching, cost of property inspection and valuation, reading magazines, journals and billboards, adverse selection on the part of buyers, number of visits made to view various apartments, number of neigbourhoods actively searched, moral hazards on the part of sellers and property agents, number of mortgage financiers contacted for financing, safety of apartment and area, biased beliefs, anchoring bias, age, marital status, educational level and regional affiliation of home buyer, size of family, choice of neighbourhood, choice of location of house, household composition, source of financing, level of household expenditure and experience with housing markets. Most of the above findings are supported empirically while others contradict evidence from the market.

4.12 Chapter Summary

The chapter captures several tests that were done as a precursor for multiple regression analysis. It also presents descriptive statistics on responses from the field which present an overview of the spread of responses on various questions posed to respondents. Besides presenting the pretest results, the chapter briefly explains the process of editing and coding in the study. Then, cross tabulation of various variables is presented to show the nature of relationship between selected variables and to make meaning of the variables especially demographic characteristics. Several tests were also carried out on research data besides the use of descriptive statistics to capture the spread in various responses received. Lastly, factor analysis was performed to reduce the study variables into some 11 factors (out of a possible 30) using the Kaiser's Eigen Value-greater-than-one rule.

TESTS OF HYPOTHESES AND DISCUSSION

5.1 Introduction

The chapter tests the four research hypotheses using multiple regression analysis (standard) and hierarchical multiple regression analysis. Each of the four hypotheses (presented in section 2.17) were operationalized into 4 sub-hypotheses with each of them having demographics, housing search and asymmetric information as the input (where applicable) and taking the four housing decisions (choice of neighbourhood, choice of location of apartment, source of financing and size of apartment house) as the outcome/dependent variable. All the sub-hypotheses were tested at a significance level of 0.05.

The regression output for the study is then presented in 3 tables. The first table (Model Summary) focuses on the Simple correlation (r) between the study variables and the Coefficient of determination (R^2). The rule of thumb for simple regression analysis will apply in making the interpretations that is a correlation less than or equal to 0.20 is considered very weak; a correlation greater than 0.20 and equal to or less than 0.40 is deemed to be weak; a correlation greater than 0.40 and equal to or less than 0.60 is deemed to be moderate; a correlation greater than 0.60 and equal to or less than 0.80 is considered strong while a correlation greater than 0.80 is considered to be very strong (Data Analysis & Computers II). The Coefficient of determination (R^2) indicates how much variation in the dependent variable is explained by the independent variable; it also presents the standard error.

The second table (ANOVA) shows the significance of the model overall. The third table (Coefficients) provides data that helps model the regression function and shows the beta values of each independent factor and whether the same has a positive or negative relationship with the outcome/dependent variable. The regression coefficients (b) are estimates of the effect of individual independent variables on the outcome (dependent variable). Positive beta coefficient values (b) indicate a direct/positive relationship

between the independent factor and the respective dependent variable meaning that higher numeric values for the independent factor were associated with higher numeric values for the dependent variable. Conversely, negative beta values indicate an inverse relationship between the specific independent factor and the dependent variable meaning that higher numeric values for the independent factor were associated with lower numeric values for the dependent variable. The interpretation of all the study sub-hypothesis was guided by the above explanation.

For each of the sub-hypothesis, the study only modeled a regression function if the model overall was significant as per the ANOVA table. This is in support of Doane and Seward (2011) who contend that in regression modeling, interest is only accorded predictors that are significant in "explaining" the variation in the dependent variable in line with the principle of *Occam's razor.* The principle advocates for simpler regression models and further notes that complex regression models can only be formulated in the absence of simpler ones. In the interpretations of hierarchical regression analysis, the study adopts the explanation by Field (2009) that the higher the F-value (in model 2), the much better the model 2 since it is an indication of an improved prediction power.

The outcome of factor analysis showed that 11 factors (generated out of 26 independent items out of 30) accounted for 73.77% variation in the study. Four independent items and other factors outside the scope of this study explained about 26.23% variation in the study. Consequently, the multiple regression analysis (standard) was computed using composites as well as using the individual independent items since all the 30 independent items had an influence on the study outcome based on the outcome of factor analysis.

5.2   Hypothesis One (H_1): Demographics and Housing decisions

The hypothesis sought to ascertain if household demographics have a statistically significant influence on the four housing decisions (choice of neighbourhood, choice of location of the apartment house, source of financing and size of house) amongst apartment households in Nairobi County, Kenya. Hence, 4 sub-hypotheses (H_{1a} to H_{1d}) were formulated for each of the four housing decisions respectively.

5.2.1 Demographics and Choice of neighbourhood (H_{1a})

Table 5.1_a to Table 5.1_c present the results of the above sub-hypothesis. In Table 5.1a, the regression function is modeled by taking the household demographics as the predictor variable and choice of neighbourhood as the outcome (dependent variable).

Table 5.1a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.415[a]	.173	.118	.818

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Dependent variable: choice of neighbourhood.

Results from Table 5.1a above indicate a moderate positive correlation between household demographics and choice of neighbourhood (r=0.415). The results further indicate that household demographic characteristics accounts for 17.3% of choice of neighbourhood decisions (R^2 =0.173).

Table 5.1b below presents results on the model overall in terms of significance.

Table 5.1b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.399	12	2.117	3.163	.000[b]
	Residual	121.781	182	.669		
	Total	147.179	194			

Significance level= 0.05

a. Dependent Variable: Choice of Neighbourhood.

Results in Table 5.1b above indicate that the model overall is statistically significant with $p<0.05$ (p=0.000; F=3.163). The above results indicate that household demographic characteristics overall have a statistically significant influence on choice of neighbourhood amongst households. Hence, the sub-hypothesis (H_{1a}) that household demographics do not have an influence on choice of neighbourhood is hereby not supported.

Table 5.1c below presents the results of beta coefficients and whether they are significant in explaining choice of neighbourhood.

Table 5.1c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.718	.472		3.641	.000
	Gender	-.282	.129	-.154	-2.192	.030
	Age	-.015	.077	-.015	-.195	.845
	Marital Status	.060	.082	.054	.741	.460
	Size of Family	-.090	.067	-.102	-1.348	.179
	Occupation/Profession	-.012	.033	-.027	-.365	.716
	Education Level	-.040	.051	-.059	-.789	.431
	Income of Household	.014	.026	.039	.520	.604
	Household Composition	.190	.069	.201	2.760	.006
	Level of Household Expenditure	.120	.054	.174	2.201	.029
	Experience with Housing Market	-.137	.069	-.146	-1.982	.049
	Expertise in Real Estate Matters	.205	.065	.222	3.153	.002
	Region Affiliation	-.062	.040	-.109	-1.533	.127

Significance level= 0.05

a. Dependent Variable: Choice of Neighbourhood

From the results in Table 5.1c above, the study finds that gender of household head, composition of household, household expenditure level, experience and expertise of the household head in real estate markets are all statistically significant demographics in explaining choice of neighbourhood decisions.

Hence, the regression function for the sub-hypothesis (H_{1a}) is extracted as follows:

$$Y_1 = 1.718 - 0.282X_1 + 0.190X_8 + 0.120X_9 - 0.137X_{10} + 0.205X_{11}$$

Where Y_1 = choice of neighbourhood; X_1 = gender of owner of house; X_8 = composition of household; X_9 = Household expenditure; X_{10} = experience with housing market matters; X_{11} = expertise in real estate matters.

5.2.2   Demographics and Choice of location of apartment house (H_{1b})

Table 5.2_a to Table 5.2_c present the results of the above sub-hypothesis. In Table 5.2a below, the final output (regression function) is modeled by taking the household demographic characteristics as the predictor variable and choice of location as the outcome (dependent variable).

Table 5.2a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.346[a]	.120	.062	1.055

Significance level= 0.05

   a.   Predictors: (Constant) and Demographics.
   b.   Dependent variable: Choice of location of house.

Results in Table 5.2a above indicate a weak positive correlation between demographic characteristics and choice of location of apartment house (r=0.346). The results also indicate that household demographic characteristics account for 12% of choice of location decisions ($R^2 = 0.120$).

Table 5.2b below presents results on the overall significance of the model.

Table 5.2b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.532	12	2.294	2.062	.021[b]
	Residual	202.540	182	1.113		
	Total	230.072	194			

Significance level= 0.05

a. Dependent Variable: Choice of Location of House

b. Predictors: (Constant) and Demographics.

Results in Table 5.2b above indicates that the model overall is statistically significant since p<0.05 (p=0.021, F= 2.062). Hence the sub-hypothesis (H$_{1b}$) that household demographic characteristics do not have a significant influence on choice of location is hereby not supported.

Table 5.2c below presents results on the regression coefficients (beta values) for each demographic characteristic and p-values to indicate whether the demographics are significant in explaining choice of location of house.

Table 5.2c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	**.978**	**.608**		**1.607**	**.110**
	Gender	-.170	.166	-.074	-1.025	.307
	Age	-.122	.100	-.098	-1.219	.224
	Marital Status	.085	.105	.061	.809	.419
	Size of Family	.117	.086	.106	1.359	.176
	Occupation/Profession	-.014	.042	-.026	-.336	.737
	Education Level	-.108	.066	-.126	-1.641	.103
	Income of Household	-.024	.034	-.056	-.721	.472
	Household Composition	.072	.089	.061	.812	.418

Level of Household Expenditure	.172	.070	.200	2.455	.015
Experience with Housing Market	.119	.089	.102	1.341	.182
Expertise in Real Estate Matters	.220	.084	.191	2.621	.010
Region Affiliation	.049	.052	.068	.930	.354

Significance level= 0.05

a. Dependent Variable: Choice of Location of House

From the results in Table 5.2c above, only household expenditure level and expertise on real estate matters have a statistically significant influence on choice of location of house. The regression function is subsequently presented below:

$$Y_2 = 0.172X_9 + 0.220X_{11}$$

Where Y_2 = choice of location of house; X_9= level of household expenditure; $X_{11=}$ expertise in real estate matters.

5.2.3 Demographics and Source of financing (H_{1c})

Table 5.3a to Table 5.3c below present the results of the above sub-hypothesis. In Table 5.3a, the final output (regression function) is modeled by taking the household demographic characteristics as the predictor variable and source of financing as the outcome (dependent variable).

Table 5.3a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.275[a]	.075	.014	.762

Results in Table 5.3a above indicate a weak positive correlation between household demographics and decisions on source of financing (r=0.275). The results further indicate that household demographic characteristics account for 7.5% of decisions on source of finance to purchase an apartment ($R^2 = 0.075$).

Table 5.3b below presents results on the significance of the model overall.

Table 5.3b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	8.621	12	.718	1.236	.261[b]
1	Residual	105.758	182	.581		
	Total	114.379	194			

Results in Table 5.3b above indicates that the model overall is not statistically significant since p>0.05 (p=0.261, F=1.236). Hence, the sub-hypothesis (H_{1c}) that household demographic characteristics do not have a significant influence on source of financing amongst households is hereby supported.

Table 5.3c below presents results on the regression coefficients (beta values) for each demographic characteristics and their respective significance in influencing source of financing.

Table 5.3c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	**1.371**	**.440**		**3.119**	**.002**
	Gender	.155	.120	.096	1.289	.199
	Age	-.008	.072	-.009	-.106	.916
	Marital Status	.183	.076	.187	2.413	.017
	Size of Family	-.061	.062	-.078	-.975	.331
	Occupation/Profession	.051	.031	.132	1.677	.095
	Education Level	-.011	.048	-.018	-.234	.816
	Income of Household	.014	.024	.045	.572	.568
	Household Composition	-.014	.064	-.017	-.225	.823
	Level of Household Expenditure	.002	.051	.004	.042	.966
	Experience with Housing Market	.009	.064	.011	.135	.893
	Expertise in Real Estate Matters	.073	.061	.090	1.211	.228
	Region Affiliation	.007	.038	.014	.187	.852

Significance level= 0.05

a. Dependent Variable: Source of financing

From the results in Table 5.3c above, the study finds that only marital status has a statistically significant influence on the decisions on source of financing. Hence, with the model overall being not significant, the regression function is hereby not formulated.

5.2.4 Demographics and Size of apartment house (H$_{1d}$)

Table 5.4a to Table 5.4c below presents the regression output of the above sub-hypothesis. In Table 5.4a, the final output (regression function) is modeled by taking the household demographic characteristics as the predictor variable and size of house as the outcome (dependent variable).

Table 5.4a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.314[a]	.099	.039	.729

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Dependent variable: size of house.

Results in Table 5.4a above show a weak positive correlation between demographic characteristics and decisions on size of apartment (r= 0.413). The results further indicate that household demographic characteristics account for only 9.9% of decisions on size of apartment house ($R^2 = 0.099$).

Table 5.4b below presents results on the significance of the model overall.

Table 5.4b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.569	12	.881	1.658	.080[b]
	Residual	96.693	182	.531		
	Total	107.262	194			

Significance level= 0.05

a. Dependent Variable: Size of the House

b. Predictors: (Constant) and Demographics

Results in Table 5.4b above indicate that the model overall is not statistically significant since p>0.05 (p=0.080, F=1.658). Hence, the sub-hypothesis (H_{1d}) that household demographics do not have a significant influence on size of apartment house is hereby supported.

Table 5.4c below presents results of the regression coefficients (beta values) for each demographic and whether they are statistically significant in explaining size of house.

Table 5.4c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	**1.762**	**.420**		**4.191**	**.000**
	Gender	.011	.115	.007	.092	.926
	Age	.038	.069	.044	.544	.587
	Marital Status	.035	.073	.036	.475	.635
	Size of Family	-.183	.060	-.242	-3.065	.003
	Occupation/Profession	.009	.029	.024	.308	.759
	Education Level	-.031	.045	-.052	-.671	.503
	Income of Household	-.001	.023	-.004	-.049	.961
	Household Composition	-.027	.061	-.034	-.445	.657
	Level of Household Expenditure	.120	.048	.204	2.468	.014
	Experience with Housing Market	-.014	.062	-.018	-.229	.819
	Expertise in Real Estate Matters	.102	.058	.129	1.751	.082
	Region Affiliation	.010	.036	.020	.270	.788

Significance level= 0.05

a. Dependent Variable: Size of the House

The results in Table 5.4c above indicate that only size of family and level of household expenditure have a significant influence on the decision on size of apartment house. With the model overall being not statistically significant, the regression function is herby not formulated.

5.2.5 Demographics versus Housing Decisions (Composite)

The output in Tables 5.4d-5.4f below is modeled by taking demographics as the input and housing search (using a composite for all the four housing decisions) as the outcome.

Table 5.4d: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.388[a]	.150	.094	2.06776

Significance level= 0.05

a. Predictors: (Constant), Demographics

The output in Table 5.4d above indicates a weak correlation between demographics and housing decisions (composite) of 0.388 while 15% of housing decisions (composite) is explained by demographics.

Table 5.4e: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	137.815	12	11.485	2.686	.002[b]
1	Residual	778.164	182	4.276		
	Total	915.979	194			

Significance level= 0.05

a. Dependent Variable: Housing Decisions (composite)

b. Predictors: (Constant), Demographics.

Table 5.4e above indicates that the model overall is significant meaning that demographics have a significant influence on housing decisions (composite) since the p-value of 0.002 is significant at 0.05.

The regression coefficients in Table 5.4f below indicate the significance of each individual demographic on the housing decisions (composite)

Table 5.4f: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.829	1.192		4.888	.000
	Gender	-.287	.325	-.063	-.882	.379
	Age	-.107	.196	-.043	-.546	.586
	Marital Status	.363	.206	.131	1.763	.080
	Size of Family	-.216	.169	-.098	-1.280	.202
	Occupation/Professsion	.034	.083	.031	.411	.681
	Education Level	-.190	.129	-.111	-1.472	.143
	Income of Household	.002	.066	.002	.031	.975
	Household Composition	.221	.174	.093	1.266	.207
	Level of Household Expenditure	.413	.137	.241	3.009	.003
	Experience with Housing Market	-.023	.175	-.010	-.131	.896
	Expertise in Real Estate Matters	.601	.165	.261	3.648	.000
	Region Affiliation	.003	.102	.002	.032	.975

Significance level= 0.05

a. Dependent Variable: Housing Decisions

With the model overall being significant at 0.05, the regression model is hereby formulated below.

$$Y_{hdc} = 5.828 + 0.413X_9 + 0.601X_{11}$$

Where Y_{hdc} = Housing decisions (composite); X_9= Household expenditure and X_{11}= expertise in real estate matters.

5.2.6 Demographics (composite) versus Housing Decisions (Composite)

The output in Tables 5.4g-5.4i below is modeled by taking demographics as the input and housing search (using a composite for all the four housing decisions) as the outcome.

Table 5.4g: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.155[a]	.024	.019	2.15228	.024	4.737	1	193	.031	1.975

Significance level= 0.05

a. Predictors: (Constant), Demographics (composite)

b. Dependent Variable: Housing Decisions (composite)

The output in Table 5.4g above indicates a very weak correlation between demographics (composite) and housing decisions (composite) of 0.155 while only 2.4% of housing decisions (composite) is explained by demographics (composite).

Table 5.4h below shows the significance of demographics (composite) on housing decisions (composite)

Table 5.4h: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.941	1	21.941	4.737	.031[b]
	Residual	894.038	193	4.632		
	Total	915.979	194			

Significance level= 0.05

a. Dependent Variable: Housing Decisions (composite)

b. Predictors: (Constant), Demographics (composite)

The output in Table 5.4h above shows that demographics (composite) are significant in explaining housing decisions (composite) since the p-value is less than the significance level of 0.05 (p=0.031).

The regression coefficients in Table 5.4f below indicate the significance of each individual demographic on the housing decisions (composite)

Table 5.4i: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.505	1.001		5.501	.000
	Demographics (composite)	.057	.026	.155	2.176	.031

Significance level= 0.05

a. Dependent Variable: Housing Decisions(composite)

With the model overall being significant at 0.05, the regression model is hereby formulated below.

$$Y_{hdc}= 5.505+ 0.057X_{30}$$

Where Y_{hdc} = Housing decisions (composite); X_{30}= Demographics (composite).

5.3 Housing Search on the relationship between Demographics and Housing decisions (H_2)

The hypothesis sought to determine if housing search had significant mediating effect on the relationship between household demographics and the 4 housing decisions (choice of neighbourhood, location of apartment house, source of financing and size of house). Hence, 4 sub-hypotheses (H_{2a} to H_{2d}) were formulated for each of the 4 housing decision choices respectively. The SPSS hierarchical test for mediation was used to test the influence of housing search on the demographics-housing decision relationship.

5.3.1 Housing Search on the relationship between Demographics and Choice of neighbourhood (H_{2a})

Tables 5.5a to Table 5.5c capture the regression output for the above sub-hypothesis. In Table 5.5a, the final output (regression function) is modeled by taking the household demographics as the predictor variable in (model 1) then household demographics and

housing search are captured as predictor variables in model 2 with demographics being the control variable; choice of neighbourhood is the outcome (dependent variable).

Table 5.5a: Model Summary[c]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.409[a]	.168	.112	.816	.168	3.019	12	180	.001	
2	.475[b]	.226	.131	.807	.058	1.432	9	171	.178	1.947

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Predictors: (Constant), Demographics and Housing Search.

c. Dependent Variable: Choice of Neighbourhood.

The results in Table 5.5a above show that there is a mediating effect of housing search on the relationship between demographic characteristics and choice of neighbourhood considering that there was a quantum change in R^2 (R^2 change= 0.058). However, the change is not statistically significant since the change statistic for F is greater than the significance level of 0.05 (p=0.178). Therefore, the sub- hypothesis (H_{2a}) that housing search does not have a significant mediating effect on the relationship between household demographics and choice of neighbourhood is hereby supported.

Table 5.5b below presents results on the significance of the model overall.

Table 5.5b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.127	12	2.011	3.019	.001[b]
	Residual	119.862	180	.666		
	Total	143.990	192			
2	Regression	32.530	21	1.549	2.377	.001[c]
	Residual	111.459	171	.652		
	Total	143.990	192			

Significance level= 0.05

a. Dependent Variable: Choice of Neighbourhood.

b. Predictors: (Constant) and Demographics

c. Predictors: (Constant), Demographics and Housing search.

Results in Table 5.5b above indicate that model 2 overall is statistically significant since p<0.05 (p=0.001). However, the study also finds that the decline in F-value (from 3.019 in model 1 to 2.377 in model 2) indicates a reduction in the predictive power of the model when housing search is taken as the 'predictor variable' upon controlling for demographic characteristics (in model 2).

Table 5.5c below presents results on regression coefficients for demographics and housing search which communicate on their respective significance in explaining choice of neighbourhood. Emphasis is on model 2 considering that hierarchical multiple regression analysis was used to capture the mediating effect of housing search.

Table 5.5c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.653	.472		3.503	.001
	Gender	-.259	.129	-.142	-2.003	.047
	Age	-.021	.077	-.022	-.276	.783
	Size of Family	-.087	.067	-.099	-1.300	.195
	Occupation/Profession	-.008	.033	-.019	-.252	.802
	Education Level	-.046	.051	-.068	-.897	.371
	Income of Household	.020	.026	.056	.740	.460
	Household Composition	.189	.069	.202	2.754	.006
	Level of Household Expenditure	.119	.054	.174	2.186	.030
	Experience with Housing Market	-.129	.069	-.139	-1.863	.064
	Expertise in Real Estate Matters	.195	.065	.212	2.986	.003
	Region Affiliation	-.062	.040	-.111	-1.547	.124
	Marital Status	.065	.081	.059	.800	.425
2	(Constant)	2.150	.713		3.016	.003
	Gender	-.334	.138	-.184	-2.418	.017
	Age	.007	.079	.007	.084	.933
	Size of Family	-.077	.067	-.088	-1.154	.250

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Occupation/Profession	.004	.035	.009	.111	.912
Education Level	-.053	.052	-.078	-1.027	.306
Income of Household	.008	.027	.023	.296	.767
Household Composition	.178	.071	.190	2.528	.012
Level of Household Expenditure	.116	.056	.170	2.051	.042
Experience with Housing Market	-.131	.074	-.142	-1.773	.078
Expertise in Real Estate Matters	.183	.067	.199	2.714	.007
Region Affiliation	-.055	.041	-.098	-1.353	.178
Marital Status	.023	.083	.021	.279	.781
Average Distance Covered while searching	.120	.057	.194	2.123	.035
Safety of the Apartment and the Area	-.046	.033	-.125	-1.413	.160
Number of Mortgage financiers contacted for financing	.097	.050	.156	1.943	.054
Number of Neighborhood Actively Searched	.049	.083	.057	.592	.555
Reading Real property magazines, Journals and billboards	-.005	.053	-.012	-.090	.928
Time devoted by home buyer in searching	-.094	.060	-.141	-1.571	.118
Search for true value of apartment	-.041	.059	-.062	-.697	.487
Cost of Property Inspection and Property Valuation	.008	.052	.019	.158	.874
Number of Visits Made to Various Apartments	-.030	.031	-.095	-.974	.332

Significance level= 0.05

a. Dependent Variable: Choice of Neighbourhood

From the results in Table 5.5c above, the study found that gender of owner of the house, composition of household, expenditure level of household, expertise and average distance covered in searching were the only factors with a statistically significant influence on choice of neighbourhood when housing search was taken as the mediating variable. The regression function is captured below:

$$Y_1 = 2.150 - 0.334X_1 + 0.178X_8 + 0.116X_9 + 0.183X_{11} + 0.120X_{19}$$

Where Y_1 = choice of neighbourhood; X_1 = gender of owner of the house; X_8 = composition of household; X_9 = Household expenditure; X_{11} = expertise in real estate matters and X_{19} = average distance covered in searching.

5.3.2 Housing Search on the relationship between Demographics and Choice of location of house (H_{2b})

Results in Table 5.6a to Table 5.6c present the regression output for the above sub-hypothesis. In Table 5.6a, the regression function is modeled by taking the household demographics as the predictor variable (in model 1) then household demographics and housing search are entered as predictor variables in model 2 with demographics being the control variable; choice of location is the outcome (dependent variable).

Table 5.6a: Model Summary[c]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.342[a]	.117	.058	1.062	.117	1.993	12	180	.027	
2	.408[b]	.166	.064	1.059	.049	1.117	9	171	.353	1.973

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Predictors: (Constant), Demographics and Housing Search.

c. Dependent Variable: Choice Location of House.

The results in Table 5.6a above show that housing search has a mediating effect on the relationship between demographic characteristics and location of house since there is a quantum change in R^2 (R^2 change= 0.049). However, the change is not statistically significant since the change statistic for F is greater than the significance level of 0.05 (p=0.353). Consequently, the sub- hypothesis (H_{2b}) that housing search does not have a significant mediating effect on the relationship between household demographic characteristics and choice of location is hereby supported. Table 5.6b below presents results on the significance of the model overall.

Table 5.6b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.972	12	2.248	1.993	.027[b]
	Residual	203.049	180	1.128		
	Total	230.021	192			
2	Regression	38.244	21	1.821	1.624	.049[c]
	Residual	191.777	171	1.122		
	Total	230.021	192			

Significance level= 0.05

a. Dependent Variable: Choice of Location of House

b. Predictors: (Constant) and Demographics.

c. Predictors: (Constant), Demographics and Housing Search.

Results in Table 5.6b above indicate that model 2 overall is statistically significant (p=0.049) at a significance level of 0.05. However, the study also finds that the decline in F-value (from 1.993 in model 1 to 1.624 in model 2) indicates a reduction in the predictive power of the model 2 when demographics are controlled for.

Table 5.6c below presents results on regression coefficients for demographics and housing search and the significance of each of the variables. Emphasis is on model 2 considering that hierarchical multiple regression analysis was used to capture the mediating effect of housing search.

Table 5.6c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.968	.614		1.577	.117
	Gender	-.166	.168	-.072	-.991	.323
	Age	-.123	.101	-.099	-1.221	.224
	Size of Family	.118	.087	.106	1.358	.176
	Occupation/Profession	-.014	.043	-.025	-.319	.750
	Education Level	-.109	.066	-.127	-1.642	.102
	Income of Household	-.023	.034	-.053	-.684	.495
	Household Composition	.072	.089	.061	.806	.421
	Level of Household Expenditure	.172	.070	.200	2.439	.016
	Experience with Housing Market	.121	.090	.103	1.345	.180
	Expertise in Real Estate Matters	.218	.085	.188	2.575	.011
	Region Affiliation	.049	.053	.068	.924	.357
	Marital Status	.086	.106	.062	.812	.418
2	(Constant)	.989	.933		1.060	.291
	Gender	-.215	.181	-.093	-1.187	.237
	Age	-.140	.103	-.112	-1.353	.178
	Size of Family	.131	.088	.119	1.494	.137
	Occupation/Profession	-.023	.045	-.041	-.503	.615
	Education Level	-.084	.067	-.099	-1.248	.214
	Income of Household	-.026	.036	-.058	-.721	.472
	Household Composition	.052	.092	.044	.562	.575
	Level of Household Expenditure	.184	.074	.214	2.495	.014
	Experience with Housing Market	.057	.097	.049	.589	.557
	Expertise in Real Estate Matters	.182	.088	.157	2.063	.041
	Region Affiliation	.048	.053	.068	.905	.367
	Marital Status	.119	.109	.086	1.091	.277
	Average Distance Covered while searching	.144	.074	.183	1.938	.054
	Safety of the Apartment and the Area	-.013	.043	-.027	-.295	.769
	Number of Mortgage financiers contacted for financing	.008	.065	.010	.116	.908

Number of Neighborhood Actively Searched	.062	.109	.057	.571	.569
Reading Real property magazines, Journals and billboards	-.122	.069	-.238	-1.767	.079
Time devoted by home buyer in searching	.131	.078	.156	1.678	.095
Search for true value of apartment	-.060	.077	-.072	-.785	.433
Cost of Property Inspection and Property Valuation	.006	.068	.011	.089	.929
Number of Visits Made to Various Apartments	.007	.041	.017	.172	.864

Significance level= 0.05
Dependent Variable: Choice of location of House

From the results in Table 5.6c above, the study found that only expenditure level of a household and expertise on real estate matters had a statistically significant influence on choice of location of an apartment house when housing search was taken as the mediating variable. The regression function is captured below:

$$Y_2 = 0.184X_9 + 0.182X_{11}$$

Where Y_2 = choice of location of apartment house; X_9 = expenditure level of household and X_{11} = expertise on real estate matters.

5.3.3 Housing Search on the relationship between Demographics and Source of financing (H_{2c})

Results for the above sub-hypothesis are captured in Tables 5.7a to 5.7c. In Table 5.7a below, the final output (regression function) is modeled by capturing household demographics as the predictor variable (in model 1) then household demographic characteristics and housing search are entered as predictor variables in model 2 with demographics being the control variable; source of financing is the outcome (dependent variable).

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Table 5.7a: Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.283[a]	.080	.018	.760	.080	1.301	12	180	.221	
2	.381[b]	.145	.040	.752	.065	1.453	9	171	.169	2.160

Significance level= 0.05

a. Predictors: (Constant) and Demographics.
b. Predictors: (Constant), Demographics and Housing Search.
c. Dependent Variable: Source of financing.

The results in Table 5.7a above show that there is a quantum change in R^2 of 6.5% (R^2 change= 0.065) associated with housing search being introduced into model 2 upon controlling for demographic characteristics. Hence, housing search has a mediating influence on the relationship between demographic characteristics and source of financing. However, mediating effect is not statistically significant since the change statistic for F is greater than the significance level of 0.05 (p=0.169). Consequently, the sub- hypothesis (H_{2c}) that housing search does not have a significant mediating effect on the relationship between household demographics and source of financing is hereby supported.

Table 5.7b below presents results on the significance of the model overall.

Table 5.7b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.028	12	.752	1.301	.221[b]
	Residual	104.091	180	.578		
	Total	113.119	192			
2	Regression	16.421	21	.782	1.383	.133[c]
	Residual	96.698	171	.565		
	Total	113.119	192			

Significance level= 0.05

a. Dependent Variable: Source of financing
b. Predictors: (Constant) and Demographics.
c. Predictors: (Constant), Demographics and Housing Search.

From Table 5.7b above, model 2 overall is not statistically significant since p>0.05 (p=0.133). However, the study finds that the increase in the F-value (from 1.301 in model 1 to 1.383 in model 2) is an indication of improved predictive power in the model with the inclusion of housing search into model 2 as the mediator variable and upon controlling for household demographic characteristics.

Table 5.7c below presents results on regression coefficients for demographics and housing search and results on their respective significance. Emphasis is on model 2 considering that hierarchical multiple regression analysis was used to capture the mediating effect of housing search.

Table 5.7c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.312	.440		2.983	.003
	Gender	.176	.120	.109	1.465	.145
	Age	-.013	.072	-.015	-.185	.853
	Size of Family	-.058	.062	-.074	-.926	.356
	Occupation/Profession	.055	.031	.141	1.790	.075
	Education Level	-.016	.047	-.027	-.339	.735
	Income of Household	.019	.025	.062	.788	.432
	Household Composition	-.015	.064	-.018	-.238	.812
	Level of Household Expenditure	.001	.051	.002	.022	.982
	Experience with Housing Market	.016	.064	.020	.252	.801
	Expertise in Real Estate Matters	.064	.061	.078	1.049	.296
	Region Affiliation	.007	.038	.013	.178	.859
	Marital Status	.188	.076	.192	2.474	.014
2	(Constant)	1.577	.664		2.375	.019
	Gender	.218	.129	.135	1.695	.092
	Age	-.031	.074	-.035	-.419	.675
	Size of Family	-.048	.063	-.062	-.775	.439
	Occupation/Profession	.036	.032	.092	1.105	.271
	Education Level	.006	.048	.009	.118	.906
	Income of Household	.021	.025	.066	.811	.419
	Household Composition	-.007	.066	-.009	-.113	.910
	Level of Household Expenditure	.005	.053	.008	.088	.930

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Experience with Housing Market	.033	.069	.040	.482	.631
Expertise in Real Estate Matters	.038	.063	.047	.610	.543
Region Affiliation	.007	.038	.014	.189	.850
Marital Status	.191	.078	.196	2.457	.015
Average Distance Covered while searching	-.044	.053	-.080	-.837	.403
Safety of the Apartment and the Area	-.054	.030	-.166	-1.781	.077
Number of Mortgage financiers contacted for financing	.025	.046	.045	.538	.591
Number of Neighborhood Actively Searched	.137	.078	.179	1.762	.080
Reading Real property magazines, Journals and billboards	-.088	.049	-.244	-1.780	.077
Time devoted by home buyer in searching	.081	.055	.138	1.460	.146
Search for true value of apartment	.073	.055	.125	1.341	.182
Cost of Property Inspection and Property Valuation	.024	.048	.063	.493	.623
Number of Visits Made to Various Apartments	-.031	.029	-.110	-1.076	.283

Significance level= 0.05

a. Dependent Variable: Source of financing

From the results in Table 5.7c above, the study found that only marital status of owner of the house had a statistically significant influence on decisions on source of financing. Hence, with model 2 overall being not significant, the regression function is not formulated.

5.3.4 Housing Search on the relationship between Demographics and Size of apartment house (H_{2d})

Table 5.8a to Table 5.8c capture results of the regression output for sub-hypothesis H_{2d}. In Table 5.8a below, the regression function is modeled by taking the household demographics as the predictor variable (in model 1) then household demographic

characteristics and housing search are entered as predictor variables in model 2 with demographics being the control variable; size of apartment house is the outcome (dependent variable).

Table 5.8a to Table 5.8c capture the regression output for the above sub-hypothesis.

Table 5.8a: Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.314[a]	.098	.038	.733	.098	1.635	12	180	.085	
2	.400[b]	.160	.057	.726	.062	1.395	9	171	.194	1.622

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Predictors: (Constant), Demographics and Housing Search.

c. Dependent Variable: Size of apartment House

The results in Table 5.8a above indicate that there housing search has a mediating effect on the relationship between demographic characteristics and size of house since there is a quantum change in R^2 (R^2 change= 0.062). However, the change is not statistically significant since the change statistic for F is greater than the significance level of 0.05 (p=0.194). Consequently, the sub- hypothesis (H_{2c}) that housing search does not have a significant mediating effect on the relationship between household demographics and size of apartment house is hereby supported. Table 5.8b below presents results on the significance of the model overall.

Table 5.8b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.540	12	.878	1.635	.085[b]
	Residual	96.683	180	.537		
	Total	107.223	192			
2	Regression	17.154	21	.817	1.551	.067[c]
	Residual	90.069	171	.527		
	Total	107.223	192			

Significance level= 0.05

a. Dependent Variable: Size of apartment House

b. Predictors: (Constant) and Demographics.

c. Predictors: (Constant), Demographics and Housing Search.

The results in Table 5.8c above indicate that model 2 is not statistically significant since p>0.05 (p=0.067). Similarly, the study finds that the decline in F-value (from 1.635 in model 1 to 1.551 in model 2) indicates a reduction in the predictive power of the model.

Table 5.8c below presents results on regression coefficients for demographics and housing search including their respective significance. Emphasis is on model 2 considering that hierarchical multiple regression analysis was used to capture the mediating effect of housing search.

Table 5.8c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	**1.757**	**.424**		**4.145**	**.000**
	Gender	.012	.116	.008	.106	.916
	Age	.037	.069	.044	.535	.594
	Size of Family	-.182	.060	-.241	-3.043	.003
	Occupation/Profession	.009	.029	.024	.314	.754
	Education Level	-.031	.046	-.053	-.675	.501
	Income of Household	-.001	.024	-.002	-.031	.975

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	Household Composition	-.027	.062	-.034	-.444	.658
	Level of Household Expenditure	.119	.049	.203	2.453	.015
	Experience with Housing Market	-.014	.062	-.017	-.218	.828
	Expertise in Real Estate Matters	.101	.059	.127	1.721	.087
	Region Affiliation	.010	.036	.020	.268	.789
	Marital Status	.035	.073	.037	.477	.634
2	**(Constant)**	**.625**	**.641**		**.975**	**.331**
	Gender	.087	.124	.055	.701	.484
	Age	.073	.071	.086	1.028	.306
	Size of Family	-.199	.060	-.263	-3.296	.001
	Occupation/Profession	.008	.031	.021	.259	.796
	Education Level	-.025	.046	-.043	-.544	.587
	Income of Household	-.015	.024	-.051	-.633	.528
	Household Composition	-.035	.063	-.043	-.553	.581
	Level of Household Expenditure	.133	.051	.225	2.611	.010
	Experience with Housing Market	-.047	.067	-.059	-.703	.483
	Expertise in Real Estate Matters	.080	.061	.101	1.316	.190
	Region Affiliation	.014	.037	.028	.376	.707
	Marital Status	.051	.075	.053	.675	.500
	Average Distance Covered while searching	.065	.051	.122	1.281	.202
	Safety of the Apartment and the Area	-.025	.029	-.080	-.862	.390
	Number of Mortgage financiers contacted for financing	.017	.045	.032	.381	.704

Number of Neighborhood Actively Searched	.023	.075	.032	.312	.755
Reading Real property magazines, Journals and billboards	.031	.048	.088	.646	.519
Time devoted by home buyer in searching	-.080	.054	-.140	-1.502	.135
Search for true value of apartment	.075	.053	.132	1.425	.156
Cost of Property Inspection and Property Valuation	.001	.046	.003	.023	.981
Number of Visits Made to Various Apartments	.041	.028	.149	1.467	.144

Significance level= 0.05

a. Dependent Variable: Size of apartment House

From the results captured in Table 5.8c above, the study finds that only family size and level of household expenditure have a statistically significant influence on decisions on size of apartment house amongst households. With the model overall being not statistically significant, the regression function is hereby not formulated.

Considering that all the four sub-hypotheses under the second hypothesis (H_2) are supported, the study hereby concludes that though housing search has an influence on the relationship between household demographics and real estate investment decisions (by virtue of the quantum change in R^2). However, the mediating influence of housing search on this relationship is not statistically significant. The implication of this finding is that the apartment owner-occupied housing market in Nairobi County, Kenya could be highly efficient to the extent of the scope of the study or apartment households in the county could be overly relying on informal search.

5.4 Asymmetric information on the relationship between Demographics and Housing decisions (H$_3$)

This hypothesis sought to establish whether asymmetric information has a significant moderating influence on the relationship between household demographics and the four real estate investment decisions namely choice of neighbourhood, choice of location of apartment, source of finance and size of house. Hence, 4 sub-hypotheses (H$_{3a}$ to H$_{3d}$) were formulated for each of the 4 decisions respectively. The SPSS hierarchical test for moderation was used to test the influence of asymmetric information on the demographics-housing decision relationship.

5.4.1 Asymmetric information on the relationship between Demographics and Choice of neighbourhood (H$_{3a}$)

Table 5.9a to Table 5.9c capture the regression output for the above sub-hypothesis. In Table 5.9a below, the final output is modeled by taking the household demographics as the predictor variable (in model 1) then household demographics and asymmetric information are entered as predictor variables in model 2 with demographics being the control variable; choice of neighbourhood is the outcome (dependent variable).

Table 5.9a: Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.410^a	.168	.112	.816	.168	3.027	12	180	.001	
2	.423^b	.179	.099	.822	.011	.472	5	175	.797	1.975

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Predictors: (Constant), Demographics and Asymmetric Information.

c. Dependent Variable: Choice of Neighbourhood.

The results in Table 5.9a above indicate that there is some quantum change in R^2 (R^2 change= 0.011) in model 2 when asymmetric information is introduced into the model upon controlling for household demographic characteristics. Hence, asymmetric information has a moderating influence on the relationship between demographics and choice of neighbourhood but the change is not statistically significant since the change statistic for F (in model 2) is greater than the significance level of 0.05 (p=0.797). Consequently, the sub- hypothesis (H_{3a}) that asymmetric information does not have a significant moderating influence on the relationship between household demographics and choice of neighbourhood is hereby supported.

Table 5.9b below presents results on the significance of the model overall.

Table 5.9b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.181	12	2.015	3.027	.001[b]
	Residual	119.809	180	.666		
	Total	143.990	192			
2	Regression	25.773	17	1.516	2.244	.005[c]
	Residual	118.216	175	.676		
	Total	143.990	192			

Significance level= 0.05

a.   Dependent Variable: Choice of Neighbourhood

b.   Predictors: (Constant) and Demographics.

c.   Predictors: (Constant), Demographics and Asymmetric Information.

The results in Table 5.9b above (for model 2) indicate that the model overall is statistically significant since p<0.05 (p=0.005, F= 2.244). However, the study finds that the decline in F-value (from 3.027 in model 1 to 2.244 in model 2) which indicates a reduction in the predictive power of the model when asymmetric information is introduced into model 2 as the moderating variable.

Table 5.9c below presents results on beta values for demographic characteristics and asymmetric information and their respective significance. Emphasis is on model 2 considering that hierarchical multiple regression analysis was used to capture the moderating effect of asymmetric information.

Table 5.9c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.653	.472		3.503	.001
	Gender	-.259	.129	-.142	-2.003	.047
	Age	-.021	.077	-.022	-.276	.783
	Marital Status	.065	.081	.059	.800	.425
	Size of Family	-.087	.067	-.099	-1.300	.195
	Occupation/Profession	-.008	.033	-.019	-.252	.802
	Education Level	-.046	.051	-.068	-.897	.371
	Income of Household	.020	.026	.056	.740	.460
	Household Composition	.189	.069	.202	2.754	.006
	Level of Household Expenditure	.119	.054	.174	2.186	.030
	Experience with Housing Market	-.129	.069	-.139	-1.863	.064
	Expertise in Real Estate Matters	.195	.065	.212	2.986	.003

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	Region Affiliation	-.062	.040	-.111	-1.547	.124
	(Constant)	**2.055**	**.740**		**2.776**	**.006**
	Gender	-.317	.139	-.174	-2.271	.024
	Age	-.016	.079	-.017	-.207	.836
	Marital Status	.038	.085	.034	.446	.656
	Size of Family	-.088	.068	-.101	-1.301	.195
	Occupation/Profession	-.006	.033	-.014	-.186	.853
	Education Level	-.047	.052	-.069	-.905	.367
	Income of Household	.024	.027	.067	.881	.379
	Household Composition	.185	.072	.198	2.583	.011
	Level of Household Expenditure	.111	.056	.163	1.995	.048
2	Experience with Housing Market	-.102	.072	-.110	-1.410	.160
	Expertise in Real Estate Matters	.200	.067	.218	2.995	.003
	Region Affiliation	-.060	.042	-.107	-1.449	.149
	Moral Hazards by Sellers and Property Agents	-.030	.030	-.077	-.999	.319
	Adverse Selection problems	.001	.025	.002	.032	.975
	Heuristics	-.003	.021	-.012	-.149	.882
	Biased Beliefs	-.015	.022	-.055	-.704	.482
	Anchoring Bias	.018	.021	.063	.846	.398

Significance level= 0.05

a.   Dependent Variable: Choice of Neighbourhood

From the results in Table 5.9c above, the study found that gender of owner of house, composition of household, expenditure level of household and expertise were the only factors with a statistically significant influence on choice of neighbourhood when asymmetric information was taken as the moderating variable. The regression function is captured below:

$$Y_1 = 2.055 - 0.317X_1 + 0.185X_8 + 0.111X_9 + 0.200X_{11}$$

Where Y_1 = choice of neighbourhood; X_1 = gender of owner of the house; X_8 = composition of household; X_9 = Household expenditure; X_{11} = expertise in real estate matters.

5.4.2 Asymmetric information on the relationship between Demographics and Choice of location of house (H_{3b})

Table 5.10a to Table 5.10c capture the regression output for the above sub-hypothesis. In Table 5.10a below, the regression function is modeled by taking the household demographics as the predictor variable (in model 1) then household demographics and asymmetric information are entered as predictor variables in model 2 with demographic characteristics being the control variable; choice of location of apartment house is the outcome (dependent variable).

Table 5.10a: Model Summary[c]

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | | Durbin-Watson |
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.346[a]	.120	.061	1.061	.120	2.039	12	180	.023	
2	.368[b]	.135	.051	1.066	.016	.627	5	175	.679	1.992

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Predictors: (Constant), Demographics and Asymmetric Information.

c. Dependent Variable: Choice of location of apartment.

The results in Table 5.10a above show that there is some moderating effect of asymmetric information on the relationship between demographic characteristics and choice of location due to the quantum change in R^2 (R^2 change= 0.016). However, the change is not statistically significant considering that the change statistic for F (in model 2) is not significant at a significance level of 0.05 (p=0.679). Therefore, the sub-hypothesis (H_{3b}) that asymmetric information does not have a significant moderating influence on the relationship between household demographic characteristics and choice of location is hereby supported.

Table 5.10b below presents results on the significance of the model overall.

Table 5.10b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.531	12	2.294	2.039	.023[b]
	Residual	202.489	180	1.125		
	Total	230.021	192			
2	Regression	31.098	17	1.829	1.609	.066[c]
	Residual	198.923	175	1.137		
	Total	230.021	192			

Significance level= 0.05

a. Dependent Variable: Choice of Location of House

b. Predictors: (Constant) and Demographics.

c. Predictors: (Constant), Demographics and Asymmetric Information.

From the results in Table 5.10b above, model 2 overall is not statistically significant since p>0.05 (p=0.066). Similarly, the study also finds that the decline in F-value (from 2.039 in model 1 to 1.609 in model 2) indicates a reduction in the predictive power of the model when asymmetric information is introduced into model 2 as a moderating variable.

Table 5.10c below presents results on regression coefficients for demographic characteristics and asymmetric information and their respective significance. Emphasis is given to model 2 considering that hierarchical multiple regression analysis was used to capture the moderating effect of asymmetric information on the relationship between demographic characteristics and choice of location.

Table 5.10c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.968	.614		1.577	.117
	Gender	-.166	.168	-.072	-.991	.323
	Age	-.123	.101	-.099	-1.221	.224
	Marital Status	.086	.106	.062	.812	.418
	Size of Family	.118	.087	.106	1.358	.176
	Occupation/Profession	-.014	.043	-.025	-.319	.750
	Education Level	-.109	.066	-.127	-1.642	.102
	Income of Household	-.023	.034	-.053	-.684	.495
	Household Composition	.072	.089	.061	.806	.421
	Level of Household Expenditure	.172	.070	.200	2.439	.016
	Experience with Housing Market	.121	.090	.103	1.345	.180
	Expertise in Real Estate Matters	.218	.085	.188	2.575	.011
	Region Affiliation	.049	.053	.068	.924	.357
2	**(Constant)**	**.944**	**.960**		**.983**	**.327**

Gender	-.205	.181	-.089	-1.134	.258
Age	-.111	.103	-.089	-1.080	.282
Marital Status	.094	.110	.068	.856	.393
Size of Family	.126	.088	.114	1.434	.153
Occupation/Profession	-.008	.043	-.014	-.179	.858
Education Level	-.101	.067	-.118	-1.508	.133
Income of Household	-.024	.035	-.054	-.689	.492
Household Composition	.042	.093	.036	.457	.648
Household Expenditure Level	.174	.072	.203	2.412	.017
Experience with Housing Market	.111	.094	.094	1.177	.241
Expertise in Real Estate Matters	.219	.087	.188	2.528	.012
Region Affiliation	.036	.054	.051	.670	.504
Moral Hazards by Sellers and Property Agents	.009	.039	.018	.230	.819
Adverse Selection	-.041	.032	-.102	-1.298	.196
Heuristics	.039	.028	.114	1.426	.156
Biased Beliefs	-.012	.028	-.034	-.419	.675
Anchoring Bias	.015	.027	.041	.533	.595

Significance level= 0.05

a. Dependent Variable: Choice of Location of House

From the results in Table 5.10c above, the study found that only household expenditure levels and expertise in real estate matters had a significant influence on choice of location of apartment amongst households. With the model overall being not statistically significant, the regression function is hereby not formulated.

5.4.3 Asymmetric information on the relationship between Demographics and Source of financing (H$_{3c}$)

The regression output for the above sub-hypothesis is captured in Table 5.11a to Table 5.11c. In Table 5.11a below, the regression function is modeled by taking the household demographics as the predictor variable (in model 1) then household demographics and

asymmetric information are entered as predictor variables in model 2 with demographics being the control variable; source of financing is the outcome (dependent variable).

Table 5.11a: Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.283[a]	.080	.018	.760	.080	1.301	12	180	.221	
2	.322[b]	.104	.017	.761	.024	.939	5	175	.457	2.254

Significance level= 0.05

a. Predictors: (Constant) and Demographics.

b. Predictors: (Constant), Demographics and Asymmetric Information.

c. Dependent Variable: Source of financing

From the results in Table 5.11a above, the study finds that there is a moderating effect of asymmetric information by virtue of a quantum change in R^2 (R^2 change=0.024) with the inclusion of asymmetric information as a moderating variable in model 2. However, the change brought about by the moderating effect of asymmetric information is not statistically significant considering that the change statistic for F (in model 2) is greater than the significance level of 0.05 (p=0.457). Hence, the sub- hypothesis (H_{3c}) that asymmetric information does not have a significant moderating influence on the relationship between household demographics and source of financing is hereby supported.

Table 5.11b below indicates the significance of the model overall.

Table 5.11b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.028	12	.752	1.301	.221[b]
	Residual	104.091	180	.578		
	Total	113.119	192			
2	Regression	11.748	17	.691	1.193	.274[c]
	Residual	101.371	175	.579		
	Total	113.119	192			

Significance level= 0.05

a. Dependent Variable: Source of financing

b. Predictors: (Constant) and Demographics.

c. Predictors: (Constant), Demographics and Asymmetric Information.

Results in Table 5.11b above indicate that Model 2 overall is not statistically significant since $p>0.05$ (p=0.274, F= 1.193). Similarly, the study finds that the decline in F-value (from 1.301 in model 1 to 1.193 in model 2) indicates a reduction in the predictive power of the model when asymmetric information is factored into the model as a moderating variable.

The results for regression coefficients for demographic characteristics and asymmetric information and their respective significance are captures in Table 5.11c below. Emphasis is given to model 2 since hierarchical multiple regression analysis was used to capture the moderating effect of asymmetric information on the relationship between demographic characteristics and size of house.

Table 5.11c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.312	.440		2.983	.003
	Gender	.176	.120	.109	1.465	.145
	Age	-.013	.072	-.015	-.185	.853
	Marital Status	.188	.076	.192	2.474	.014
	Size of Family	-.058	.062	-.074	-.926	.356
	Occupation/Profession	.055	.031	.141	1.790	.075
	Education Level	-.016	.047	-.027	-.339	.735
	Income of Household	.019	.025	.062	.788	.432
	Household Composition	-.015	.064	-.018	-.238	.812
	Level of Household Expenditure	.001	.051	.002	.022	.982
	Experience with Housing Market	.016	.064	.020	.252	.801
	Expertise in Real Estate Matters	.064	.061	.078	1.049	.296
	Region Affiliation	.007	.038	.013	.178	.859
2	**(Constant)**	**1.742**	**.685**		**2.541**	**.012**
	Gender	.233	.129	.144	1.805	.073
	Age	-.034	.073	-.040	-.469	.640
	Marital Status	.206	.079	.211	2.615	.010
	Size of Family	-.046	.063	-.060	-.736	.463
	Occupation/Profession	.061	.031	.157	1.977	.050
	Education Level	-.022	.048	-.036	-.455	.650
	Income of Household	.017	.025	.055	.685	.494
	Household Composition	-.006	.066	-.007	-.085	.932
	Level of Household Expenditure	-.008	.052	-.014	-.162	.871
	Experience with Housing Market	.004	.067	.005	.066	.947
	Expertise in Real Estate Matters	.050	.062	.061	.809	.419
	Region Affiliation	-.007	.038	-.014	-.181	.856
	Moral Hazards by Sellers and Property Agents	.029	.028	.083	1.042	.299
	Adverse Selection	-.040	.023	-.139	-1.748	.082
	Heuristics	-.007	.020	-.028	-.346	.730
	Biased Beliefs	-.013	.020	-.053	-.652	.515
	Anchoring Bias	-.004	.020	-.014	-.181	.856

Significance level= 0.05

a. Dependent Variable: Source of financing

From Table 5.11c above, the study found that only marital status had a significant effect on decisions on source of financing amongst the households. With the model overall being not statistically significant (p=0.274), the regression function is hereby not formulated.

5.4.4 Asymmetric information on the relationship between Demographics and Size of house (H$_{3d}$)

Table 5.12a to Table 5.12c capture the regression output for the above sub-hypothesis. In Table 5.12a below, the regression function is modeled by taking the household demographics as the predictor variable (in model 1) then household demographics and asymmetric information are entered as predictor variables in model 2 with demographic characteristics being the control variable; size of house is the outcome (dependent variable).

Table 5.12a: Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.314^a	.098	.038	.733	.098	1.635	12	180	.085	
2	.377^b	.142	.059	.725	.044	1.795	5	175	.116	1.607

Significance level= 0.05

a. Predictors: (Constant), Demographics.

b. Predictors: (Constant), Demographics and Asymmetric Information.

c. Dependent Variable: Size of the House

The results in Table 5.12a above indicate that there is some moderating effect of asymmetric information on the relationship between demographic characteristics and size of house by virtue of there being a quantum change in R^2 (R^2 change= 0.044). However, the moderating effect is not statistically significant since the change statistic for F (in model 2) is not significant (p=0.116). Therefore, the sub- hypothesis (H$_{3d}$) that asymmetric information does not have a significant moderating influence on the relationship between household demographics and size of house is hereby supported.

Table 5.12b below presents results on the overall significance of the model.

Table 5.12b: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.428	12	.869	1.616	.090^b
	Residual	96.795	180	.538		
	Total	107.223	192			
2	Regression	14.953	17	.880	1.668	.053^c
	Residual	92.270	175	.527		
	Total	107.223	192			

Significance level= 0.05

a. Dependent Variable: Size of the House

b. Predictors: (Constant) and Demographics.

c. Predictors: (Constant), Demographics and Asymmetric Information.

The results in Table 5.12b above indicate that Model 2 overall is not statistically significant (p=0.053, F= 1.668). However, the study finds that the increase in F-value (from 1.616 in model 1 to 1.668 in model 2) indicates an improvement in the predictive ability of the model with the inclusion of asymmetric information.

The results for regression coefficients for demographic characteristics and asymmetric information and their respective significance are captures in Table 5.12c below. Emphasis is given to model 2 since hierarchical multiple regression analysis was used to capture the moderating effect of asymmetric information on the relationship between demographic characteristics and size of apartment house.

Table 5.12c: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.757	.424		4.145	.000
	Gender	.012	.116	.008	.106	.916
	Age	.037	.069	.044	.535	.594
	Marital Status	.035	.073	.037	.477	.634
	Size of Family	-.182	.060	-.241	-3.043	.003

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	Occupation/Profession	.009	.029	.024	.314	.754
	Education Level	-.031	.046	-.053	-.675	.501
	Income of Household	-.001	.024	-.002	-.031	.975
	Household Composition	-.027	.062	-.034	-.444	.658
	Level of Household Expenditure	.119	.049	.203	2.453	.015
	Experience with Housing Market	-.014	.062	-.017	-.218	.828
	Expertise in Real Estate Matters	.101	.059	.127	1.721	.087
	Region Affiliation	.010	.036	.020	.268	.789
2	**(Constant)**	**.379**	**.653**		**.581**	**.562**
	Gender	.068	.123	.044	.557	.578
	Age	.053	.070	.062	.755	.451
	Marital Status	.056	.075	.059	.744	.458
	Size of Family	-.182	.060	-.241	-3.046	.003
	Occupation/Profession	.001	.029	.003	.044	.965
	Education Level	-.020	.046	-.035	-.444	.658
	Income of Household	-.003	.024	-.009	-.120	.905
	Household Composition	-.043	.063	-.053	-.680	.497
	Level of Household Expenditure	.127	.049	.217	2.588	.010
	Experience with Housing Market	-.033	.064	-.042	-.522	.602
	Expertise in Real Estate Matters	.096	.059	.121	1.633	.104
	Region Affiliation	.006	.037	.012	.155	.877
	Moral Hazards by Sellers and Property Agents	.064	.027	.186	2.372	.019
	Adverse Selection	.011	.022	.039	.496	.621
	Heuristics	.019	.019	.081	1.014	.312
	Biased Beliefs	.008	.019	.031	.390	.697
	Anchoring Bias	.009	.019	.036	.467	.641

Significance level= 0.05

a.   Dependent Variable: Size of the House

From the results in Table 5.12c above, the study finds that only size of family, level of household expenditure and moral hazards by sellers and property agents have a significant effect on decision choices on size of apartment house amongst households. With the model overall being not statistically significant (p=0.053), the regression function is hereby not formulated.

5.4.5 Demographics (composite), Housing Search (composite) and Asymmetric information (composite) versus Housing decisions (composite)

Table 5.12d to Table 5.12f below capture all the four study variables as composites and subsequently present the results of the regression output with demographics, housing search and asymmetric information being the input and housing decisions being the outcome.

Table 5.12d: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.166[a]	.028	.012	2.15761

Significance level= 0.05

a. Predictors: (Constant), Housing Search (composite), Demographics (composite), Asymmetric Information (composite)

Table 5.12d above indicate a very weak correlation (r=0.166) between demographics, housing search and asymmetric information (all taken as composites) on housing decisions (composite). Only 2.8% of variations in housing decisions (composite) are accounted by the three variables all taken as composites.

Table 5.12e below shows the significance of the model overall.

Table 5.12e: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.036	3	8.345	1.793	.150[b]
	Residual	879.845	189	4.655		
	Total	904.881	192			

Table 5.12e above indicates that the model overall is not significant hence demographics (composite), housing search (composite) and asymmetric information (composite) do not have a significant influence on housing decisions (composite).

Table 5.12f below shows the significance of each of the three variables (all computed as composites) on housing decisions (composite).

Table 5.12f: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	**5.007**	**1.690**		**2.962**	**.003**
	Demographics	.061	.027	.167	2.312	.022
	Asymmetric Information	.005	.060	.018	.091	.928
	Housing Search	.000	.056	-.001	-.004	.996

Since the model overall was not significant, the regression function is hereby not formulated. However, table 5.12f above indicates that only demographics (composite) had a statistically significant influence on housing decisions (composite).

5.5   The joint influence of demographics, housing search and asymmetric information on housing decisions versus the influence of Demographics on Housing decisions (H$_4$)

The hypothesis sought to ascertain if the joint influence of household demographic characteristics, housing search and asymmetric information had a significant influence on housing decisions which was not greater than the influence of demographics on such

decisions. Hence, four sub-hypotheses (H_{4a} to H_{4d}) were formulated to operationalize hypothesis H_4.

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5.5.1 The joint influence of demographics, housing search and asymmetric information on choice of neighbourhood versus the influence of Demographics on Choice of neighbourhood (H_{4a})

Results of the regression output for the sub-hypothesis are captured in Table 5.13a to Table 5.13c below. In Table 5.13a, results of the nature and strength of the relationships between the input and the output are captured besides the predictive power of the input in explaining the outcome (choice of neighbourhood).

Table 5.13a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.507[a]	.257	.146	.800

Significance level= 0.05

a. Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

b. Dependent variable: choice of neighbourhood.

Table 5.13a above shows a moderate positive correlation (r=0.507) between demographics, housing search and asymmetric information (all three variables considered as one input variable) and choice of neighbourhood as the dependent variable. The results above further indicate that a combination of the three variables jointly accounts for 25.7% ($R^2 = 0.257$) of choice of neighbourhood decisions amongst households.

While testing sub-hypothesis H_{1a}, (in Table 5.1a), the study found that demographic characteristics singly accounted for only 17.3% ($R^2 = 0.173$) of choice of neighbourhood decisions amongst households compared to the 25.7% ($R^2 = 0.257$) accounted for by the three variables taken jointly. This suggests that some predictive power was added to the model with the inclusion of housing search and asymmetric information over and above demographic characteristics. Consequently, the sub-hypothesis that the 3 variables jointly do not have a significant influence on choice of neighbourhood which is greater than the influence of demographic characteristics on choice of neigbourhood is hereby not supported. Table 5.13b below presents results on the significance of the model overall.

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Table 5.13b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.977	25	1.479	2.308	.001[b]
	Residual	107.013	167	.641		
	Total	143.990	192			

Significance level= 0.05

a. Dependent Variable: Choice of Neighbourhood.

b. Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

Table 5.15b above shows that the model overall is statistically significant since $p<0.05$ (p= 0.001, F= 2.308).

Table 5.13c below presents results of the regression coefficients of demographics, housing search and asymmetric information and their respective significance.

Table 5.13c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	**2.493**	**.742**		**3.360**	**.001**
	Gender	.303	.369	.166	.822	.412
	Age	.653	.342	.664	1.912	.058
	Marital Status	.758	.394	.689	1.921	.056
	Size of Family	.554	.340	.633	1.628	.105
	Occupation/Profession	.641	.336	1.461	1.910	.058
	Education Level	.581	.340	.860	1.712	.089
	Income of Household	.634	.332	1.810	1.909	.058
	Household Composition	.816	.342	.871	2.384	.018
	Household Expenditure	.765	.347	1.124	2.204	.029
	Experience with Housing Market	.484	.331	.522	1.464	.145
	Expertise in Real Estate Matters	.823	.336	.896	2.446	.015
	Region Affiliation	.569	.335	1.010	1.701	.091
	Moral Hazards by Sellers and Property Agents	-.020	.039	-.051	-.528	.598
	Adverse Selection	-.022	.072	-.069	-.308	.758

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Heuristics	-.218	.143	-.796	-1.526	.129
Anchoring Bias	-.023	.029	-.080	-.791	.430
Cost of Property Inspection and Property Valuation	-.022	.123	-.052	-.181	.857
Search for true value of apartment	-.064	.059	-.097	-1.081	.281
Time devoted by home buyer in searching	.136	.164	.205	.828	.409
Reading Real property magazines, Journals and billboards	.148	.119	.364	1.249	.213
Number of Neighborhood Actively Searched	-.017	.088	-.020	-.191	.849
Number of Mortgage financiers contacted for financing	.125	.068	.202	1.837	.068
Safety of the Apartment and the Area	-.037	.033	-.101	-1.119	.265
Average Distance Covered while searching	.344	.153	.554	2.248	.026

Significance level= 0.05

a. Dependent Variable: Choice of Neighbourhood

From the results in Table 5.13c above, composition of household, level of household expenditure, expertise in real estate matters and average distance covered in searching are the only independent factors that have a significant influence on choice of residential neighbourhood. Hence, the regression function is formulated below:

$$Y_1 = 2.493 + 0.816X_8 + 0.765X_9 + 0.823X_{11} + 0.344X_{19}$$

Where Y_1 = choice of neighbourhood; X_8 = composition of household; X_9 = Household expenditure; X_{11} = expertise in real estate matters and X_{19} = average distance covered while searching.

Despite the model overall being statistically significant, and some more explanatory power added to the model with the inclusion of housing search and asymmetric information, none of the indictors of asymmetric information indicators were significant in explaining choice of neighbourhood (see Table 5.13c above). This finding suggests that a household's choice of neighbourhood is an efficient process which is not confounded with asymmetric information problems.

5.5.2 The joint influence of Demographics, Housing search and Asymmetric information on Choice of location versus Demographics on choice of location (H_{4b})

Results of the regression output for the sub-hypothesis are presented in Tables 5.14a to 5.14c below. In Table 5.14a, results of the nature and strength of the relationships between the input and the output are captured besides the predictive power of the input in explaining the outcome (choice of location of house).

Table 5.14a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.440[a]	.193	.073	1.054

Significance level= 0.05

a. Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

c. Dependent variable: Choice of location of house.

Results in Table 5.14a above indicate a moderate positive correlation (r= 0.440) between demographics, housing search and asymmetric information (all three variables considered as a single input variable and choice of location of apartment. The results further indicate that a combination of the three variables jointly accounts for 19.3% ($R^2 = 0.193$) of choice of location of apartment decisions amongst households.

Further results indicate that when testing sub hypothesis $H_{1b,}$ (in Table 5.2a), it was found that demographic characteristics singly accounts for only 12% ($R^2 = 0.120$) of choice of location of apartment decisions amongst households compared to the 19.3% ($R^2= 0.193$) accounted for by the three variables taken jointly. Consequently, the sub-hypothesis that

Table 5.14b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	44.458	25	1.778	1.600	.044[b]
	Residual	185.562	167	1.111		
	Total	230.021	192			

Significance level= 0.05

a. Dependent Variable: Choice of Location of House

b. Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

the three variables jointly do not have a significant influence on choice of location of apartment which is greater than the influence of demographic characteristics on choice of location of apartment is hereby not supported.

Table 5.14b above shows that the model overall is statistically significant since $p < 0.05$ ($p = 0.044$, $F = 1.600$). This is an indication that demographic characteristics, housing search and asymmetric information jointly have a statistically significant on choice of location of an apartment house.

Table 5.14c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.267	.977		1.297	.197
	Gender	.551	.486	.239	1.134	.259
	Age	.577	.450	.464	1.282	.202
	Marital Status	.968	.519	.696	1.864	.064
	Size of Family	.868	.448	.784	1.937	.054
	Occupation/Profession	.710	.442	1.281	1.607	.110
	Education Level	.659	.447	.771	1.473	.143
	Income of Household	.707	.438	1.595	1.615	.108
	Household Composition	.790	.451	.667	1.752	.082
	Level of Household Expenditure	.941	.457	1.094	2.059	.041
	Experience with Housing Market	.761	.435	.649	1.747	.082

Expertise in Real Estate Matters	.893	.443	.769	2.015	.046
Region Affiliation	.787	.441	1.106	1.788	.076
Moral Hazards by Sellers and Property Agents	-.025	.051	-.051	-.503	.616
Adverse Selection	.038	.095	.094	.401	.689
Heuristics	.244	.188	.705	1.298	.196
Anchoring Bias	.013	.038	.037	.347	.729
Cost of Property Inspection and Property Valuation	.030	.162	.056	.185	.853
Search for true value of apartment	-.068	.078	-.082	-.873	.384
Time devoted by home buyer in searching	-.137	.216	-.163	-.633	.527
Reading Real property magazines, Journals and billboards	-.299	.156	-.582	-1.913	.057
Number of Neighborhood Actively Searched	.036	.116	.033	.311	.757
Number of Mortgage financiers contacted for financing	-.040	.090	-.051	-.446	.656
Safety of the Apartment and the Area	-.010	.044	-.020	-.218	.828
Average Distance Covered while searching	-.097	.201	-.124	-.481	.631

Significance level= 0.05

a. Dependent Variable: Choice of Location of House

From the results in Table 5.14c above, only the level of household expenditure and expertise in real estate matters have a significant influence on choice of location of apartment house amongst apartment households in Nairobi County, Kenya. Hence, the regression function is formulated below:

$$Y_2 = 0.941X_9 + 0.893X_{11}$$

Where Y_2 = choice of location of apartment house; $X_{9=}$ Household expenditure; $X_{11=}$ expertise in real estate matters.

Despite the model overall being significant, and some more explanatory power being added to the model with the inclusion of housing search and asymmetric information, none of the housing search or asymmetric information indicators were significant in explaining the model (see Table 5.14c). This finding suggests that the owner-occupied housing market for apartments in Nairobi County, Kenya could be efficient to the extent of not having severe information problems necessitating intensive search.

5.5.3 The joint influence of Demographics, Housing search and Asymmetric information on Source of financing versus the influence of Demographics on source of financing (H_{4c})

Results of the regression output for the sub-hypothesis is presented in Table 5.15a to Table 5.15c below. In Table 5.15a, results of the nature and strength of the relationships between the input and the output are captured as well as the coefficient of determination (R^2) which shows the predictive power of the input in explaining the outcome (source of financing).

Table 5.15a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.416[a]	.173	.049	.748

Significance level= 0.05

    a.   Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

    b.   Dependent variable: Source of financing

Results in Table 5.15a above shows an average positive correlation (r= 0.416) between demographics, housing search and asymmetric information (all three variables taken as a single input variable and source of financing amongst households. A combination of the three variables jointly accounts for 17.3% (R^2 = 0.173) of source of financing decisions amongst households. Results of hypothesis tests of H_{1c} (in Table 5.3a) indicate that demographic characteristics singly accounts for only 7.5% (R^2 = 0.075) of source of financing decisions amongst households compared to the 17.3% (R^2 = 0.173) accounted for by the three variables taken jointly. Consequently, the sub-hypothesis that the three variables jointly do not have a significant influence on source of financing decisions which is greater than the influence of demographic characteristics on source of financing is hereby not supported.

Table 5.15b below shows results on the overall significance of the model.

Table 5.15b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.578	25	.783	1.398	.111[b]
	Residual	93.542	167	.560		
	Total	113.119	192			

Significance level= 0.05

a. Dependent Variable: Source of financing

b. Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

Results in Table 5.15b above indicate that the model overall is not statistically significant since p> 0.05 (p= 0.111, F= 1.398).

Table 5.15c below shows the beta values of demographics, housing search and asymmetric information and their respective significance.

Table 5.15c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.732	.694		2.497	.014
	Gender	.540	.345	.335	1.567	.119
	Age	.271	.319	.311	.848	.398
	Marital Status	.540	.369	.554	1.465	.145
	Size of Family	.264	.318	.341	.831	.407
	Occupation/Profession	.334	.314	.858	1.063	.289
	Education Level	.297	.317	.496	.936	.351
	Income of Household	.315	.311	1.016	1.015	.311
	Household Composition	.292	.320	.351	.911	.363
	Level of Household Expenditure	.317	.325	.525	.977	.330
	Experience with Housing Market	.324	.309	.394	1.047	.297
	Expertise in Real Estate Matters	.349	.315	.428	1.108	.269
	Region Affiliation	.296	.313	.593	.946	.345
	Moral Hazards by Sellers and Property Agents	.004	.036	.011	.102	.918
	Adverse Selection	-.121	.068	-.423	-1.789	.075
	Heuristics	-.095	.134	-.390	-.709	.479
	Anchoring Bias	-.023	.027	-.093	-.865	.388
	Cost of Property Inspection and Property Valuation	.157	.115	.414	1.362	.175
	Search for true value of apartment	.050	.055	.086	.906	.366
	Time devoted by home buyer in searching	.180	.153	.306	1.173	.243

Reading Real property magazines, Journals and billboards	-.036	.111	-.101	-.329	.743
Number of Neighborhood Actively Searched	.086	.083	.113	1.044	.298
Number of Mortgage financiers contacted for financing	.056	.064	.102	.883	.378
Safety of the Apartment and the Area	-.044	.031	-.136	-1.431	.154
Average Distance Covered while searching	.058	.143	.106	.406	.685

Significance level= 0.05

a. Dependent Variable: Source of financing

Despite the model overall being not significant, the results in Table 5.15c indicate that none of the independent variables for demographic characteristics, housing search and asymmetric information was significant in explaining source of financing decisions except for the intercept. In testing hypothesis H_{1c} (see Table 5.3c), the study found that only marital status which was significant in explaining financing source out of all the demographic characteristics. This finding suggests that the housing market for apartments in Nairobi County, Kenya is not confounded with massive asymmetric information problems to warrant intensive search amongst prospective apartment buyers.

5.5.4   The joint influence of Demographics, Housing search and Asymmetric information on Size of house versus the influence of Demographics on Size of house (H_{4d})

The hypothesis was tested by consolidating all the demographic characteristics, housing search indicators and asymmetric information indicators as one input variable and regressing the same against size of an apartment house. The explanatory power of the model was then compared with the predictive power of demographics on size of apartment house.

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The regression output for the above sub-hypothesis is presented in Tables 5.16a to 5.16c below. In Table 5.16a, results of the nature and strength of the relationships between the input and the output are captured as well as the coefficient of determination which shows the predictive power of the input in explaining the outcome (size of house).

Table 5.16a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.453[a]	.205	.086	.715

Significance level= 0.05

a. Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

b. Dependent variable: Size of house

Results in Table 5.16a above show an average positive correlation (r= 0.453) between demographics, housing search and asymmetric information (all three variables taken as a single input variable and size of house. A combination of the three variables jointly accounts for 20.5% ($R^2 = 0.205$) of decisions on size of house amongst households.

While testing for sub-hypothesis H_{1c} (in Table 5.4a), the study found that demographic characteristics singly accounts for only 9.9% ($R^2 = 0.099$) of decisions on size of apartment amongst households compared to the 20.5% ($R^2 = 0.205$) accounted for by the three variables taken jointly. Consequently, the sub-hypothesis that the three variables taken jointly do not have a significant influence on decisions on size of apartment which is greater than the influence of demographic characteristics on size of apartment is hereby not supported.

Table 5.16b below contains results of the significance of the model overall.

Table 5.16b: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.960	25	.878	1.720	.024[b]
	Residual	85.263	167	.511		
	Total	107.223	192			

a. Dependent Variable: Size of the House

b. Predictors: (Constant), Demographics, Housing Search and Asymmetric Information.

Results from Table 5.16b above indicate that the model overall is statistically significant since $p < 0.05$ ($p = 0.024$, $F = 1.720$).

Table 5.16c below contains the regression coefficients for demographics, housing search and asymmetric information and their respective significance.

Table 5.16c: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.775	.662		1.170	.244
	Gender	.775	.329	.493	2.355	.020
	Age	.703	.305	.828	2.306	.022
	Marital Status	.793	.352	.836	2.253	.026
	Size of Family	.466	.304	.617	1.534	.127
	Occupation/Profession	.649	.300	1.715	2.167	.032
	Education Level	.618	.303	1.058	2.037	.043
	Income of Household	.628	.297	2.076	2.116	.036
	Household Composition	.608	.305	.752	1.991	.048
	Level of Household Expenditure	.802	.310	1.366	2.589	.010
	Experience with Housing Market	.579	.295	.724	1.964	.051
	Expertise in Real Estate Matters	.721	.300	.910	2.401	.017
	Region Affiliation	.652	.299	1.342	2.185	.030
	Moral Hazards by Sellers and Property Agents	.062	.034	.180	1.790	.075
	Adverse Selection problems on the Part of buyers	-.061	.064	-.220	-.949	.344
	Heuristics	.155	.128	.654	1.213	.227
	Anchoring Bias	.007	.025	.027	.260	.795
	Cost of Property Inspection and Property Valuation	.149	.110	.402	1.350	.179

		.049	.053	.086	.922	.358
Search for true value of apartment		.049	.053	.086	.922	.358
Time devoted by home buyer in searching		-.253	.146	-.443	-1.731	.085
Reading Real property magazines, Journals and billboards		-.101	.106	-.289	-.957	.340
Number of Neighborhood Actively Searched		-.037	.079	-.050	-.468	.640
Number of Mortgage financiers contacted for financing		-.018	.061	-.033	-.290	.772
Safety of the Apartment and the Area		-.012	.030	-.037	-.401	.689
Average Distance Covered while searching		-.080	.137	-.149	-.582	.561

Significance level= 0.05

a. Dependent Variable: Size of the House

From Table 5.16c above, all demographics were significant except for size of family and experience with the housing market. This finding indicate that gender, age, marital status, occupation and educational level of owner of the house, income of household, composition of household, level of household expenditure, expertise in real estate matters and regional affiliation have a significant influence on decisions on size of apartment amongst households. Hence, the regression function is formulated below:

$$Y_4 = 0.775X_1 + 0.703X_2 + 0.793X_3 + 0.649X_4 + 0.618X_5 + 0.628X_6 + 0.608X_8 + 0.802X_9 + 0.721X_{11} + 0.652X_{12}$$

Where Y_4 = choice of size of house; X_1 = gender of owner of the house; X_2 = age of owner of the house; X_3 = marital status of owner of the house; X_4 = occupation/profession of owner of the house; X_5 = educational level of owner of the house; X_6 = income of household; X_8 = composition of household; X_9 = household expenditure; X_{11} = expertise in real estate matters and X_{12} = regional affiliation of owner of the house.

Despite the model overall being significant, the results in Table 5.16c above indicate that none of the independent factors for housing search and asymmetric information was significant in explaining decisions on size of apartment house except for the ten demographic characteristics. This finding suggests that the owner occupied housing market for apartments in Nairobi County, Kenya could be efficient to the extent of not having severe asymmetric information problems to necessitate intensive search amongst buyers.

5.6 Summary of findings

The section presents a summary of the study findings in view of the four hypotheses of the study and the research objectives. For each of the four hypotheses (H_1 to H_4), four sub-hypotheses were developed with each of them having choice of neighbourhood, choice of location of house, source of financing and size of house as the outcome respectively. All the 16 sub-hypotheses were tested at a significance level of 0.05 using multiple regression analysis (standard) and hierarchical multiple regression analysis.

5.6.1 Demographic characteristics-Housing Decisions relationship (H_1)

The hypothesis was tested using multiple regression analysis (standard). The tests for sub-hypothesis H_{1a} found that demographic characteristics overall had a statistically significant influence on choice of neighbourhood (p=0.000). The gender of household head, composition of household, expenditure of household, experience with real estate markets and expertise in real estate markets were found to be the only demographic characteristics with a statistically significant influence on choice of neighbourhood. In testing sub-hypothesis H_{1b}, the study similarly found that demographic characteristics overall had a statistically significant influence on choice of location of house (p=0.021). Expenditure level of the household and the home owners' expertise in real estate matters were found to be the only demographic characteristic with a statistically significant influence on choice of location of house.

The findings of sub-hypothesis H_{1c} and H_{1d} are presented as follows. For H_{1c}, the study found that there was no statistically significant influence of demographic characteristics on source of financing decisions (p=0.261). However, only marital status of the owner of the house had a statistically significant influence on source of financing out of all the 12 demographic characteristics informing the study. From the tests for sub-hypothesis H_{1d}, the study did not find a statistically significant influence of demographic characteristics on size of apartment house (p=0.080). However, size of a family and expenditure levels of the household were found to be the only demographic characteristics with a statistically significant influence on size of apartment house.

Demographics overall were significant in explaining housing decisions (composite) unlike demographics, housing search and asymmetric information (all composites) on housing decisions (composite). Despite the latter being not significant (p=0.150), demographics (composite) were the only variable with a significant influence on housing decisions (composite) to confirm that the predictor variable has a higher influence on housing decisions (composite) unlike the mediator and moderator variables.

5.6.2 Mediator effect of Housing Search on Demographics- Housing Decisions relationship (H_2)

Using hierarchical multiple regression analysis, the hypothesis test was informed by model 2 by controlling for demographic characteristics and entering housing search as the input variable into model 2 with each of the 4 housing decisions being the outcome respectively.

For sub-hypothesis H_{2a}, model 2 overall was found to be statistically significant (p=0.001). Despite there being a mediating effect of housing search on the relationship between demographic characteristics and choice of neighbourhood (R^2 change=0.058), the mediation was found to be not statistically significant (p=0.178). The average distance covered while searching was the only housing search indicator with a statistically significant influence on choice of neighbourhood. In testing sub-hypothesis

H_{2b}, model 2 overall was found to be statistically significant (p=0.049). Despite there being a mediating effect of housing search on the relationship between demographic characteristics and choice of location of house (R^2 change=0.049), the mediation effect was not statistically significant (p=0.353).

The tests for sub-hypothesis H_{2c} showed that model 2 overall was not statistically significant (p=0.133). However, despite there being a mediating effect of housing search on the relationship between demographic characteristics and source of financing (R^2 change=0.065), the mediation was not statistically significant (p=0.169). In testing for sub-hypothesis H_{2d}, the study found that model 2 overall was not statistically significant either (p=0.067) and despite there being a mediating effect of housing search on the relationship between demographic characteristics and size of house (R^2 change=0.062), the mediation was found to be not statistically significant (p=0.194).

5.6.3 Moderator effect of Asymmetric Information on Demographic characteristics- Housing Decisions relationship (H_3)

Using hierarchical multiple regression analysis, the hypothesis test focused on model 2 by controlling for demographic characteristic and entering asymmetric information as the input variable with each of the 4 housing decisions being the outcome respectively.

For sub-hypothesis H_{3a}, the study found that there was indeed a moderation effect associated with asymmetric information due to the quantum change in R^2 (R^2 change =0.011). However, the moderating effect of asymmetric information on the relationship between demographic characteristics and choice of neighbourhood was not statistically significant considering that the change statistic for F was greater than the significance level of 0.05 (p=0.797). However, model 2 overall was found to be statistically significant (p=0.005).

While testing for sub-hypothesis H_{3b}, the study found that there was indeed a moderation effect of asymmetric information on the relationship between demographic characteristics and choice of location of apartment house associated with the quantum change in R^2 (R^2 change =0.016). However, the moderation was found to be not statistically significant (p=0.679) since the change statistic for F was greater than the significance level of 0.05. Model 2 overall was found not to be statistically significant either (p=0.066).

For sub-hypothesis H_{3c}, the study found that there was indeed a moderation effect of asymmetric information on the relationship between demographic characteristics and source of financing as a result of the quantum change in R^2 (R^2 change =0.024). However, the moderation effect was not statistically significant based on the change statistic for F (p=0.457) which was greater than the significance level of 0.05. Model 2 overall was found not to be statistically significant either (p=0.274).

For sub-hypothesis H_{3d}, the study found that there was indeed a moderation effect associated with asymmetric information associated with the quantum change in R^2 (R^2 change =0.044). However, the moderation of asymmetric information on the relationship between demographic characteristics and size of house was not statistically significant since the change statistic for F was greater than the significance level of 0.05 (p=0.116). Model 2 overall was not statistically significant either (p=0.053).

5.6.4 Demographics, Housing Search and Asymmetric Information versus Housing Decisions relationship (H_4)

The hypothesis test combined the 3 variables into 'one input' and tested their relationship with the four real estate investment decisions (choice of neigbourhood, choice of location of apartment, source of financing and size of house respectively that is H_{4a} to H_{4d}). The results of the coefficient of determination (R^2) were then compared to the results of the same in the first hypothesis (H_1) to form the basis of supporting or not supporting the four sub-hypotheses.

For sub-hypothesis H_{4a}, the study found that the combined effect of demographics, housing search and asymmetric information on choice of neighbourhood ($R^2 =0.257$) was greater than the effect of demographic characteristics (singly) on choice of neighbourhood ($R^2 =0.173$); the model overall was significant (p=0.001). Similarly, for sub-hypotheses H_{4b}, the study found that the combined effect of demographics, housing search and asymmetric information on choice of location of apartment house ($R^2 =0.193$) was greater than the effect of demographic characteristic characteristics on choice of location of apartment house ($R^2 =0.120$); the model overall was significant too (p= 0.044).

The tests for sub-hypotheses H_{4c} showed that the combined effect of demographics, housing search and asymmetric information on source of financing ($R^2 =0.173$) was greater than the effect of demographic characteristics singly on source of financing ($R^2 =0.075$); the model overall was not statistically significant (p=0.111) Similarly, for sub-hypotheses H_{4d}, it was found that the combined effect of demographics, housing search and asymmetric information on size of house ($R^2 =0.205$) was greater than the effect of demographic characteristics singly on size of house ($R^2 =0.099$); the model overall was significant (p=0.024)

The findings for the fourth hypothesis (H_4) suggest that there is increased predictive power in the model when the three variables are taken as 'one input' compared to the influence brought about by the independent variable (demographic characteristics) since the joint influence of demographic characteristics, housing search and asymmetric information on all the 4 real estate investment decisions was greater than the influence of demographic characteristics (singly) on all the 4 real estate investment decisions.

5.7 Discussion of findings

This section presents an interaction between the study findings and academic and empirical literature. The study analyzed the influence of demographic characteristics on choice of neighbourhood, choice of location of house, source of financing and size of

house. The investigation of demographics-choice of neighbourhood relationship found that demographic characteristics have a statistically significant influence overall in explaining choice of neighbourhood decisions. This finding that household demographics determines choice of residential neighbourhood has empirical support from Smith e*t al.* (1979), Imwati (2010), Beguy *et al.* (2010) and Makachia (2010). In particular, the finding that only experience of the home owner with the housing markets and expertise in real estate matters had a statistically significant influence on choice of neighbourhood was empirically supported by Lambson e*t al.* (2004).

However, the study findings on the preceding paragraph contradict Makachia (2010), Smith *et al.* (1979) and Galvez and Kleit (2011) who both found that income of the household was a key determinant of choice of residential neighbourhood. Though the study did not find size of family to be significant in explaining choice of neighbourhood decisions, the Rossi (1955) study found that the size of family was indeed a key determinant of a household's settlement. According to the Kenya National Land Policy (2009), inadequate environmental management of land and rapid urbanization have been cited as a key challenge of the land equation in Kenya which affects the quality of residential neighbourhood.

The study further found that choice of location was particularly explained by level of household expenditure and expertise in real estate matters; the model overall was significant meaning that demographic characteristics overall do have a statistically significant influence on choice of location of house. This is finding is supported by Wong (2002), Ito and Hirino (1993), Claurietie and Sirmans (2006) and Imwati (2010) who both found that location of a house closer to public utilities and a good road network were key factors in explaining the settlement of a household. The finding that the home owners' expertise on real estate matters was significant in explaining choice of location compares with Northcraft and Neale (1987) but contradicts empirical evidence by Oundo (2011) who found that location of a house was largely influenced by accessibility and

adequacy of infrastructure. In Malaysia, Tan *et al.* (2008) found that choices in housing were largely determined by the type of house, its location amongst other factors.

Clayton (1998) indicates that buying a house is expensive hence the need for mortgage financing. The investigation of demographics-source of financing relationship showed that only marital status had a statistically significant influence on source of financing. This finding contradicts Galvez and Kleit (2011) and Mundra and Oyelere (2013) who both found that the wealth of a household influenced mortgage financing. The finding that income was not a significant factor in determining source of housing finance differs with empirical evidence from Zambia and Nigeria where most home owners could not access mortgage financing due to their limited financial capacity (Arvanitis, 2013). Similalry, the Bank of Ghana (2007) found that demand for mortgage financing in Ghana was significantly affected by low income levels, a finding which is not supported by this study either. This study did not find age of the home owner to be a determinant of source of financing thought Fortin and Leclerc (2007) found that age was indeed a key factor influencing access to mortgage financing.

Size of residential housing has received increased attention in the recent past due to the high rates of urbanization, overcrowding and poor planning in urban centres (National Housing Policy of Kenya, 2004). Hence, the study sought to test the demographics-size of house relationship and found that size of family and the level of household expenditure were the only demographic characteristics with a statistically significant influence on a household's investment decisions of size of house. The finding that size of family did have a significant influence on the size of house is empirically supported by Quigley and Weinberg (1977), Wheaton (1990) and Rossi (1955). This finding further confirms conventional thinking that the number of family members in a household often determines the size of house that a family desires all else constant.

The mediating influence of housing search on demographics-housing decisions was tested in hypothesis two. The study found that there was indeed a mediation effect caused by housing search though the same was found to be not statistically significant in

influencing the relationship between demographics and choice of neighbourhood, choice of location of apartment house, source of financing and size of house. This finding compares with empirical evidence by Rossi (1955), Cronin (1982) and Carrillo (2012) to the extent that gender of home owner and composition of household influence choice of neighbourhood when housing search is taken as the mediator variable. The average distance covered while searching was found to be the only search indicator with a statistically significant influence on choice of neighbourhood. The findings of this study on the home owners' region of affiliation and their gender further contradict Galvez and Kleit (2011) and Quigley and Weinberg (1977) who both found that region of affiliation and gender of the home owner influenced choice of residential neighbourhood respectively. Preference of particular neighbourhoods has been empirically confirmed by the Galvez and Kleit (2011) study which found that households who were displaced by the Holmat Consent Decree in Mineapolis US ended up residing within the outskirts of the central city closer to their original homes. The study also found that all races avoided certain neighbourhoods that were preoccupied by racial groups other than their own.

When testing the mediation of housing search on the demographics-location of house relationship, the study found that expenditure of household and expertise of home owner in real estate matters were the only statistically significant factors in explaining location of a house. The study finding on the home owners' expertise in housing market matters are supported by Northcraft and Neale (1987) but contradict the prescriptions of National Housing Policy of Kenya (2004) and Rashidi *et al.* (2012) on the need to expend adequate search effort to improve location utility. This is considering that the study results indicate minimal search effort to improve location outcomes. The finding that the home owners' region of affiliation did not influence choice of location was found to contradict evidence by Wong (2002).

The study tested the mediating effect of housing search on demographics-source of financing relationship. Clayton (1998) indicates that buying a residential house is expensive and that most buyers often opt for mortgage financing since they do not have the requisite financial ability to buy a house. The study found that the number of

mortgage financiers contacted for financing was not statistically significant in explaining source of financing. This finding contradicts Mulder (2006) who advocates for extensive searching for housing finance. The study found marital status of owner of the house to be the only demographic significant in accounting for source of finance decisions. The finding that income was not significant in explaining source of financing contradicts evidence by Gau (1987) and Mundra and Oyelere (2013) who both found that securing mortgage financing was dependent on ones income and some personal attributes.

The study investigated the mediating influence of housing search on the demographics-size of house relationship and found that size of family and its level of expenditure had a significant influence on size of house. These findings are supported by Wheaton (1990) who indicates that size of a family determines the size of house. The finding that the composition of a household did not significantly influence the size of house contradicts evidence documented by Koklic and Vida (2001) and Hodd (1999).

The findings of this study of the mediating effect of housing search being not statistically significant in all the 4 sub-hypothesis for H_4 is an indication of low levels of housing search in the owner-occupied apartment housing market in Nairobi County, Kenya. This finding corroborates the findings of Rossi (1955), Cronin (1982), Barrett (1973) and Brown and Holmes (1971) who similarly found very low levels of housing search. Rossi (1955) found that 48% of those who rented houses and 33% of home owners had examined only one housing unit; Brown and Holmes (1971) found out that 44% of home owners had examined only one unit while 88% had searched four units or less; Barrett (1973) found that about 42% of the households had examined four units or less while 48% had searched for less than a month.

The determination of the moderating effect of asymmetric information on demographics-housing decisions confirmed that in deed there was moderation but the moderation was not statistically significant in explaining the four real estate investment decisions. With the moderation of asymmetric information being taken into account, the study found that

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asymmetric information did not have a statistically significant influence on choice of neighbourhood: this finding is supported by empirical evidence by Turnbull and Sirmans (1993), Watkins (1998) and Case and Shiller (1989). However, the finding contradicts the evidence of Garmaise and Moskowitz (2004) from 7 states in the US who found mixed and weak evidence of asymmetric information. The finding that anchoring bias did not explain choice of neighbourhood is in contradiction of the findings of Northcraft and Neale (1987). The investigation to explain the moderating influence of asymmetric information on the relationship between demographics-choice of location of house did not find the moderation of asymmetric information to be statistically significant in influencing the relationship. This finding is in conflict with Phipps (1988), Lambson *et al.* (2004) and Imwati (2010) all who found that heuristics, anchoring bias and income had a significant influence on residential housing location choices respectively.

The influence of asymmetric information on demographics-source of financing relationship was found not to be statistically significant. However, marital status of owner of the house was found to be the only factor having a significant influence on source of financing. These findings contradict Igawa and Kanatas (1990) who found that moral hazards had an influence on mortgage financing. The findings of FinmarkTrust (2010) that income had an influence on source of financing (in Nigeria) are equally not supported by this study.

The study further found that asymmetric information overall did not have a significant moderating influence on demographics-size of house relationship. However, the study found that moral hazards by property sellers and property agents had a significant influence on size of house. The finding of lack of a moderation of asymmetric information in the demographics-size of house relationship is supported empirically by Turnbull and Sirmans (1993), Myer *et al.* (1992), Garmaise and Moskowitz (2004) and Watkins (1998) all who did not find a strong presence of asymmetric information in real estate markets. However, some of the findings of this study on demographics-size of house relationship contradict empirical evidence by Northcraft and Neale (1987) who

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found that anchoring bias and heuristics had a significant influence on the size of residential dwellings unlike for this study.

The study findings on the joint influence of demographics, housing search and asymmetric information on all the four real estate investment decisions versus the influence of demographics (singly) on such decisions indicate that the joint influence of the three variables was indeed greater than the sole influence of demographics on choice of neighbourhood, choice of location of house, source of financing and size of house. Hence, this is an indication that indeed there is some influence caused by the mediator (housing search) and the moderator (asymmetric information) variables over and above the influence attributed to demographic characteristics.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Summary

This study sought to determine the influence of demographic characteristics on real estate investment decisions amongst apartment households in Nairobi County and the mediator and moderator influence of housing search and asymmetric information on this relationship respectively. Firstly, the thesis presents the background to the study by capturing the conceptual, theoretical and contextual issues explaining the study. Hence, the research problem, which documents the knowledge gaps that the study sought to fill, culminates to the objectives of the study. The thesis briefly highlights the anticipated value addition from the research effort. Secondly, the study documents relevant literature on the study variables from the local as well as foreign housing markets and subsequently develops a conceptual model to show the study relationships; these are followed by four research hypotheses with each of them being operationalizing into four sub-hypotheses. Thirdly, the study presents an overview of research methodology by justifying the choice of positivist philosophy and expounding on the descriptive cross-sectional research design that was adopted for the study. In addition, the sampling process and sample size determination are explained using systematic procedures. The study further explains the data collection method and procedures and the data analysis methods that were used

Fourthly, a descriptive analysis of research data is performed as well as cross tabulation of selected variables to determine the nature of relationships. Several tests are performed on the data before conducting multiple regression analysis. A summary of findings for each sub-hypothesis is documented to form a basis for discussion of the findings with literature. Lastly, the study draws conclusions based on the documented findings and presents implications of such conclusions. In addition, the study makes recommendations to policy and finance practice besides documenting the contribution that the study intends to make to existing knowledge. The limitations encountered in the course of the study are similarly documented as well as suggestions for further research based on the research gaps that were identified by the study.

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6.2 Conclusion

In view of the research findings documented in the preceding chapter, the study makes several conclusions in relation to the research objectives and hypotheses. Firstly, from tests of hypothesis one, the study concludes that demographic characteristics overall do have a statistically significant influence on housing decisions that are related to the housing environment conditions that is choice of neighbourhood, choice of location of apartment house. This finding is supported by several empirical studies though it also contradicts some other studies. With the model overall for demographics-source of financing being not statistically significant, the study concludes that there could be other factors outside the scope of this study, that could be having a significant influence on household decisions on source of financing (in addition to marital status of owner of the house). Decisions on size of house are explained by how big or small a size the family is and the spending patterns on the household. The size of house desired by households is directly influenced by how big a family one has and the household expenditure patterns.

Secondly, since all the four sub-hypotheses for hypothesis two (H_2) were supported, the findings on the mediating effect of housing search on the relationship between demographic characteristics and housing decisions confirm that in deed there was such mediation but the mediation was not statistically significant for all the four sub-hypotheses. Hence, the study concludes that housing search does not seem to have a major influence on the relationship between demographics and real estate investment decisions analyzed by this study.

Thirdly, bearing in mind that all the four sub-hypotheses for hypothesis three (H_3) were supported, the findings of the study on the moderating effect of asymmetric information on the relationship between demographic characteristics and choice of neighbourhood, choice of location of apartment house, source of financing and size of house confirm that in deed there was such moderation but the moderating effect was similarly not statistically significant for all the four sub-hypotheses.

Fourthly, in view of the preceding paragraph, the study findings on the existence of a mediating and moderating effect of housing search and asymmetric information respectively on the relationship between demographic characteristics and all the housing decisions is further corroborated by the fact that all the sub-hypotheses under hypothesis four (H_4) were not supported. This finding confirms that indeed the additional predictive power (over and above the one for demographic characteristics) added to the model in testing hypothesis four (H_4) was attributed to the mediator (housing search) and moderator variables (asymmetric information) respectively.

Sixthly, the outcome of demographics-source of financing relationship was contrary to empirical evidence. The study found that marital status (in particular being married) was the only factor throughout the study that singly influenced source of financing when testing for the first, second and third hypotheses (H_1, H_2 and H_3). This was found to be in contrast to the findings of factor analysis which found that income was the most important demographic characteristic in the study. In addition, conventional investment behaviour strongly suggests that income is a key factor in determining key investment decisions such as buying a house. This finding on marital status of the owner of the house did not receive empirical support.

Lastly, demographic characteristics overall have a significant influence of the environmental factors that affect the quality of residential housing. This is based on the findings of the study that demographics in deed explain choice of the social setting where a household chooses to buy an apartment house (neighbourhood) and location related considerations such as amenities, good road network and availability of public utilities.

6.3 Implications of the Study

There are several noteworthy implications associated with the outcome of this study. Firstly, the study supported all the sub-hypothesis in hypothesis two (H_2). Consequently, the implications of this conclusion is that the housing market for owner-occupied apartment households in Nairobi County, Kenya is highly efficient to the extent of the

scope of this study (hence the low level of housing search amongst the households studied). In addition apartment home buyers in Nairobi County could be employing the informal search behaviour of asking friends, neighbours, workmates and family members for any real estate information they desire including the type of houses that are up for sale. Hence, buyers do not need to expend much time and effort in searching efficiently for housing and housing market information since high levels of search are associated with markets which are largely inefficient.

Secondly, since the study found that the moderating effect of asymmetric information on the relationship between demographic characteristics and all the housing decisions was not statistically significant, it implies that there may not be severe asymmetric information problems in the apartment owner-occupied housing market in Nairobi County, Kenya in the course of buying an apartment. Hence, this suggests that the housing market could be largely efficient to the extent of the scope of this study. Thirdly, the implication of the study not supporting all the sub-hypotheses under hypothesis four (H_{4a} to H_{4d}) is that housing search (mediator) and asymmetric information (moderator) have a substantial, though not significant, influence on the relationship between demographic characteristics and choice of neighbourhood, choice of location of house, source of financing and size of house.

Fourthly, the study found that the average distance covered in searching for a house was statistically significant in explaining choice of neighbourhood. The implication of this finding is that most households could be putting in adequate search effort and time in physically moving around to search for housing market information before they choose their preferred neighbourhood: the households seem not to be utilizing services of market intermediaries in improving their search utility despite the Nairobi County housing market having the most developed market for real estate intermediaries in the country. Fifthly, the study found that moral hazards by sellers and property agents had a significant influence on size of house. The implication of this finding is that sellers and property agents could be misleading households on the utility gains associated with

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different sizes of houses as they make decisions of which size of house to buy. Hence, property sellers and agents could be misleading prospective home buyers to buy apartment houses that are not of their desired size.

Lastly, marital status of the owner of house (in particular being married) was found to be the only demographic characteristic with a statistically significant influence in explaining source of financing (for hypotheses one, two and three). However, the implication of this finding is that marital unions in Nairobi County, Kenya increased chances of home ownership as supported by both academic and empirical literature. Probably, when two individuals are in a marital union, they experience improved income levels and a higher financial resource base (all else constant) due to their combined resources and that since marriage is presumed to be long term, they would often have a motivation for seeking mortgage financing.

6.4 Recommendation to Policy and Practice
In view of the findings of the study and its subsequent conclusions, the study makes the following recommendations to policy and finance practice. Firstly, since demographic characteristics overall were found to have more significant influence on choice of neighbourhood and choice of location of house compared to source of financing and size of house, the relevant housing, infrastructure and development control departments within then national government and the County Government of Nairobi should formulate relevant environmental policy guidelines for residential areas such as zoning, pollution and development control laws in view of the fact that households pay more attention to the neighbourhood characteristics and location characteristics influencing the quality of housing.

Secondly, since marital status was the only demographic characteristic with a statistically significant influence on source of financing in first three study hypotheses, the study recommends that mortgage financiers should review their mortgage product positioning to focus more on the married apartment buyers as opposed to the singles since 58.16%

(114) of the 196 respondents were actually married and 80.6 % of them had actually used mortgage financing to buy their apartment houses.

Thirdly, the study recommends that mortgage financiers should evaluate their credit policy in view of the findings and conclusions of the study. In particular, since income was found to be the most important of all the demographic characteristics (from factor analysis) and being married was the most significant factor in explaining source of financing, the mortgage financiers could set their lending policy in view of these two demographic characteristics.

Fourthly, property developers should consider formulating their construction policy guidelines to target the construction of bigger houses (3 or 4 bedroomed) as opposed to smaller ones. In particular, since a significant majority of respondents were married and composition of household was identified as a significant factor in explaining most of the housing decision choices, the property developers could consider focusing more on the construction and subsequent sale of 3 or 4 bed roomed apartment houses as opposed to smaller ones (1 or 2 bed roomed) since the married would often prefer bigger houses just like families whose composition is varied all other factors constant.

Fifthly, The National Construction Authority (NCA) should consider encouraging information disclosure by property developers to the benefit of other market players especially home buyers. This will be a way of curbing moral hazards in the residential real estate construction sector and associated asymmetric information problems like adverse selection. This will also help reduce buyer search costs.

Lastly, 80.6% (158) of the responding households used mortgage financing to buy their apartments. Hence, the study recommends that as property developers construct more apartments in Nairobi County, they should consider centralizing mortgage financing by making arrangements for buyers to conveniently access mortgage financing instead of requiring buyers to make their own private mortgage arrangements which is often more

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time consuming and tedious. In particular, property developers should form partnerships with mortgage financiers, lawyers and property valuers as a way of centralizing access to mortgage financing.

6.5 Contribution to Knowledge

This study makes contributions to housing finance theory, practice and policy in several ways as explained hereunder. Firstly, the study makes contributions to finance theory on how the study variables account for real estate investment decisions in Nairobi County, this being an area which is unique and deficient of similar empirical evidence from the Kenyan housing market. The study further contributes to the existing body of knowledge by explaining households' housing investment behaviour. Secondly, academicians will appreciate the outcome of study by forming a basis of conducting future studies in areas where some knowledge gaps were identified. Thirdly, the research effort will be value additive to personal finance students since it will contribute to their greater understanding of how the study variables explain housing decision choices in Nairobi County.

Fourthly, the study further contributes to the existing body of knowledge by documenting that source of financing decisions amongst households are not significantly influenced by the household's income despite factor analysis documenting income to be the most important demographic in the study. Instead, the study found that marital status (in particular being married) was the only factor with a significant influence on source of financing. In addition, the study found that source of financing was the most important real estate investment decision compared to choice of neighbourhood, choice of location of house and size of apartment house.

Fifthly, upon investigating the different forms of search behaviour, the study contributes to knowledge by finding that the average distance covered while searching was the only significant factor in explaining choice of residential neighbourhood decisions. This indicates that households in Nairobi County invest heavily in physically searching for apartments by moving around the County to view the units that are up for sell and the

neighbourhood features associated with an apartment. Sixthly, prospective apartment home buyers in Nairobi County, Kenya will appreciate the decision making environment and significant factors influencing key housing decision choices in the context of the scope of the study.

Lastly, the absence of a significant mediation and moderation of housing search and asymmetric information in this study is a strong indication that the housing market could be highly efficient to the extent of the scope of this study. This contribution to knowledge is a good basis for academicians to consider studies to test the extent to which the home ownership market for apartments is informationally efficient. This finding is a contribution to academic knowledge in an area which remains largely scanty and fragmented compared to other areas of finance discipline like corporate finance, public finance and financial institutions and markets.

6.6 Limitations of the study

The study encountered some limitations which are documented hereunder. Firstly, there were some methodological challenges that are noteworthy. The study adopted a descriptive cross-sectional research design where relationships between the four study variables were tested at a single point in time. However, there are certain changes in demographic characteristics and market conditions that could have a significant bearing on real estate investment decisions that could not be captured in a descriptive cross-sectional design of this nature. In particular, a household's accumulation of wealth with the passage of time, changes in marital status (like singles getting married and divorce), higher educational attainment, changes and implications of new residential zoning laws, new public utilities in a neighbourhood and infrastructural developments (like the construction of a major public road) could all have a significant influence on the four real estate investment decisions made by a household over a given time period.

Secondly, the outcome of this research effort was context specific. Hence, the outcome of the research effort may not be replicated to other settings such as other counties in Kenya. Hence, the study may not be generalized to such other 'similar' settings due to the

contextual differences. For instance, demographic differentials in other counties in Kenya may be significantly different from those of households in Nairobi County; housing search behaviour and asymmetric information could have a statistically significant influence when tested in the other counties in Kenya despite the same not having a statistically significant influence in Nairobi County.

Thirdly, the study was focused on apartment owner-occupied households in Nairobi County, Kenya. The empirical investigation could have made much more value addition to finance theory, policy and practice had it focused on all households, including those occupying massionates and bungalows, across the country as opposed to only focusing on Nairobi County. Hence, outcome of the research effort could have been much more inclusive had the study been a survey of the entire housing market in Kenya. However, since Nairobi is the metropolitan city of the country (accounting for about half of the country's housing market for owner-occupied apartments) and the fact that the County has received a lot of attraction in apartment housing developments over the last few years was adequate justification to form the context for this study.

Fourthly, the unit of analysis for housing market studies of this nature is often the household while the respondent in most of these studies is the owner of the house. This has been widely supported by empirical evidence cited in the study literature. However, some of the demographic characteristics evaluated were actually personal characteristics of the owner of the house and not demographics of the household. Conventionally, it is argued that the owner of the house has much influence on a household's key decisions made. The study nevertheless carried on with this limitation since the owner of the house is considered to be the representative of the household who has a significant influence on most of the investment decisions made by a household including purchase of a residential house. Fifthly, the study suffered from lack of relevant housing market studies in Nairobi County on housing search and asymmetric information. However, the study relied on studies from foreign housing markets to enhance the discussions.

Finally, the study suffered from lack of similar studies from other counties in Kenya to enhance discussions on the study findings. Most of the empirical literature from the Kenyan housing market was from housing studies in Nairobi County, Kenya. This limitation affected the study discussions and empirical anchorage of the study. However, to overcome this challenge, the study relied on empirical evidence from previous studies of a similar nature carried out in different parts of Nairobi County and other similar studies from foreign housing markets.

6.7 Areas for further study

The research gaps documented out of the research effort provide some basis for further empirical investigations. Firstly, there is need to consider carrying out a similar study that adopts a descriptive longitudinal design so as to capture the time effect of changes in certain household demographic characteristics whose dynamic nature is bound to significantly affect housing decision choices with time. Such demographics include changes in marital status (like singles getting married), changes in a households income levels over time, higher educational attainment, increase in size of household and changes in household composition.

Secondly, the study finds need to conduct a study to test the efficiency of residential owner-occupied housing market in Nairobi County, Kenya to the extent of the scope of this study considering that asymmetric information did not seem to be a significant problem in the course of households buying an apartment house. In addition, the fact that the tests for hypothesis 2 and 3 found a low level of housing search (a behaviour which is often suggestive of an efficient financial market) and absence of significant asymmetric information problems respectively is a good basis for the need to test for efficiency of the housing market in Nairobi County, Kenya.

Thirdly, marital status of the home owner appeared conspicuously as the only factor with a statistically significant influence on source of financing for hypotheses one, two and three. A causal study could be carried out to find the link between the two variables and

an exploratory study to ascertain other factors that have a significant influence on source of financing decisions for apartment buyers in Nairobi County, Kenya.

Fourthly, the study suggests that a study should be carried out to investigate the influence of informal search behaviour on real estate investment decisions amongst apartment households in Nairobi County since the study found that formal search behaviour was not statistically significant in explaining choice of neighbourhood, choice of location of house, source of financing and size of apartment house.

Lastly, a study should be carried out to investigate why there is a very high mortgage uptake in the apartment owner-occupied housing market in Nairobi County whereas several empirical studies from the Kenyan housing market document very low mortgage uptake in the country.

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APPENDICES

Appendix I: Questionnaire

Dear Respondent,

My name is OMAGWA JOB OMBONGI**, a PhD (Finance) candidate** at the University of Nairobi. I am undertaking a research on **Demographics, Housing Search, Asymmetric Information and Housing Decisions amongst Apartment Households in Nairobi County, Kenya.** By virtue of being a household that bought an apartment for residential purposes, you form part of the respondents for this research. Please accept my invitation to participate in this research by sparing some time to fill the questionnaire.

This questionnaire is being administered for research purposes and any information provided will be used purely for academic purposes and will be treated with confidentiality.

The **questionnaire is <u>meant to be filled by the person who actually bought the apartment house</u>. If you bought the house <u>jointly</u> with your spouse or with your son or daughter, kindly let <u>the household head</u> fill the questionnaire.**

Attached to this questionnaire is a Letter of Introduction from the Associate Dean, Graduate Business Studies.

Thank you.

Please read the questions carefully and feel free to respond to them by giving your response by ticking (√) whichever option best describes you or applies to you.

<u>SECTION A: HOUSEHOLD DEMOGRAPHICS</u>

Kindly tick the box that best describes your personal and household demographic characteristics **that existed at the time when you were actually buying the apartment house (AND <u>NOT</u> WHAT DESCRIBES YOU TODAY).**

1. Your **gender**   Male ☐   Female   ☐

2. Your **Age bracket** at the time *when you were buying the apartment house*

    ☐ 20-29   ☐ 30-39   ☐ 40-49   ☐ 50-59   ☐ 60-69   ☐ 70-79   ☐ 80-89

3. Your **Marital Status** at the time *when you were buying the apartment house*

    ☐ Single   ☐ Married   ☐ Separated   ☐ Divorced   ☐ Widowed/widower

4. The **Size of your household** at the time *when you were buying the apartment house*

    ☐ 1 member   ☐ 2-4 members   ☐ 5-7 members   ☐ 8-10 members   ☐ 11-13 members
    ☐ more than 13 members

5. Your **occupation/profession** at the time *when you were buying the apartment house*

   ☐ Accountant ☐ Teacher ☐ Engineer ☐ Medic ☐ Architect No professional affiliation ☐ Business person ☐ Other occupation/profession not listed

6. Your **educational level** at the time *when you were buying the apartment house*

   ☐ Primary ☐ Secondary ☐ High School ☐Certificate ☐College ☐ University

7. Your **Monthly Net Income Bracket (plus that of your spouse, son or daughter if you bought the house jointly with them)** *when you were buying the house*

   ☐ 30,000-49,999   ☐ 50,000-69,999   ☐ 70,000-89,999   ☐ 90,000-109,999

   ☐ 110,000- 129,999   ☐ 130,000-149,999   ☐150,000-169,999   ☐ 170,000-189,999

   ☐ 190,000-209,999   ☐ 210,000 or more

8. The **Composition of your household** at the time *when you were buying the apartment house*

   ☐ Only males   ☐ Only females   ☐ Both males and females   ☐ You had School going children and (or) spouse

9. Your **average monthly household expenditure** at the time *when you were buying the apartment house (all figures are in '000)*

   ☐ 20-50   ☐51-80   ☐81-110   ☐111-140   ☐141-170   ☐ 171-200
   ☐ 201-230   ☐231-260   ☐ over 261

10. How many **years of housing market experience** did you have at the time *when you were buying the apartment house*

    ☐ None   ☐ 1-3yrs   ☐ 4-6 yrs   ☐ 7-9 yrs   ☐ 10-12 yrs   ☐ 13-15 yrs
    ☐   More than 15 years experience

11. Did you consider yourself an **expert in real estate matters** at the time *when you were buying the apartment house?*

    ☐ Yes   ☐ Not that much   ☐ No   ☐ Not sure

12. Kindly indicate **your origin in terms of the part of Kenya** you are affiliated to

☐ Northern   ☐ Eastern   ☐ Southern   ☐ Western   ☐Central
☐ Non-Kenyan

SECTION B: HOUSING DECISIONS

13. When you were buying your apartment house, you were very keen and particular on the **neighbourhood/ social setting** where the apartment is located
    ☐ Yes   ☐ Not that much   ☐ No   ☐ Not at all

14. You **chose to buy** an apartment house **at a strategic location** which had **adequate access to amenities like hospitals, schools, shops, clubs, hotels etc** and **a good transportation system**
    ☐ Yes   ☐ Not that much   ☐ No   ☐ Not at   all

15. What is the **Size** of your apartment house?   ☐ 2 bed roomed   ☐ 3 bed roomed
    ☐ 4 bed roomed

16. What was **your Source of financing** to buy your apartment house?
    ☐ Cash   ☐ Mortgage   ☐ Cash and Mortgage

SECTION C: HOUSING SEARCH (EFFORT AND SEARCH COST)

The following questions are meant to establish the **search efforts and costs** you expended and incurred in the course of searching for a residential apartment house.

17. **How many houses (in total) did you view** before you decided to buy the apartment house that you eventually bought?

    ☐ 1-3   ☐ 4-6   ☐ 7-9   ☐ 10-12   ☐ 13-15   ☐ more than 15

18. **How many apartment locations (in total)** did you view in the course of buying an apartment house?

    ☐ 1-3   ☐ 4-6   ☐ 7-9   ☐ 10-12   ☐13-15   ☐ more than 15

19. **How many neighbourhoods/social settings or constituencies (in Nairobi County)** did you view in the course of buying an apartment house?

    ☐ 1-3   ☐ 4-6   ☐ 7-9   ☐ 10-12   ☐13-15   ☐ more than 15

20. Kindly indicate what applies to you in terms of the number of **phone calls** that you made to your **real estate agent/seller to enquire about the available apartment houses** that were on sale

    ⬜ Very many   ⬜ Many   ⬜ A few   ⬜ Very few   ⬜ None at all

21. **On average**, what was **the cost (in Kenya shillings) you incurred in inspecting several houses** before buying your current apartment house?

    ⬜ Less than 5,000 ⬜ 5,000-9,999 ⬜ 10,000-14,999 ⬜ 15,000-19,999 ⬜ 20,000-24,999 ⬜ 25,000- 29,999 ⬜ sh. 30,000 or more

22. **On average**, what was **the cost of valuation fees** for evaluating your apartment house?

    ⬜ Less than 10,000 ⬜ 10,000- 14,999 ⬜ 15,000-19,999 ⬜ 20,000-24,999 ⬜ 25,000-29,999 ⬜ 30,000- 34,999 ⬜ 35,000-39,999 ⬜ more than sh. 40,000

23. **How many real estate magazines, journals and articles did you read** to acquire relevant real estate market information in the course of buying your apartment house?

    ⬜ Very many   ⬜ Many   ⬜Just a few   ⬜ Very few   ⬜ None at all

24. **How many advertisements (on apartment sales) did you read** to acquire relevant real estate market information in the course of buying your apartment house?

    ⬜ Very many   ⬜ Many   ⬜Just a few   ⬜ Very few   ⬜ None at all

25. **How much <u>time</u> did you devote in** searching for an apartment house and associated features like its location, neighbourhood, available public utilities, social amenities among others

    ⬜ Too much time   ⬜ Much time   ⬜ Little time   ⬜ Very little time   ⬜ No time at all

26. What was the **average distance (in kilometers) you covered** in visiting various property sites leading to the purchase of your current apartment house?

    ⬜ Very long   ⬜ Long   ⬜ Average   ⬜ Short   ⬜ Very short

27. **How much effort** did you put **in finding out the fair price/ value** of the apartment house?

 ⬜ Too much effort   ⬜ Much effort   ⬜ Little effort   ⬜ Very little effort

 ⬜ No effort at all

28. Kindly indicate the **extent to which you devoted time** in **searching** for issues related to **safety of the apartment** especially on matters relating to **ventilation, staircase/lifts,** windows, doors, roofing among others

 ⬜ Very great extent   ⬜ Great extent   ⬜ Not sure   ⬜ Small extent   ⬜ Not at all

29. Kindly indicate the **extent to which you devoted time** in **searching** for issues related to **safety of the area where the apartment is located** in terms of **crime history, social composition, street lighting, proximity to police station** among others

 ⬜ Very great extent   ⬜ Great extent   ⬜ Not sure   ⬜ Small extent   ⬜ Not at all

30. **How many mortgage financiers/banks** (if you indeed got a mortgage) did you **contact for purposes of advancing you a mortgage** to buy your apartment house?

 ⬜ Not applicable   ⬜ 1-2   ⬜ 3-4   ⬜ 5-6   ⬜ more than 6

31. **How often** did you frequent **offices of property sellers in search for market information** with a view of buying an apartment house?

 ⬜ Very Often   ⬜ Often   ⬜ Not sure   ⬜ Less often   ⬜ Not at all

32. **How many Kenya Homes Expo Editions** did you attend at the Kenyatta International Conference Centre (**KICC**) in search for housing market information

 ⬜ None   ⬜ 1   ⬜ 2   ⬜ 3   ⬜ 4   ⬜5   ⬜ more than 5

SECTION D: ASYMMERTIC INFORMATION(HIDDEN KNOWLEDGE AND HIDDEN ACTION IN MARKET TRANSACTIONS)

The following statements relate **to asymmetric information situations** presumed to have had an influence on **your real estate investment decisions.** Kindly tick the extent to which you agree or disagree with the statements on a scale of 5 (Strongly Agree) to 1 (Strongly Disagree).

KEY: (**5**-) Strongly Agree, (**4**) Agree, (**3**) Neutral, (**2**) Disagree, (**1**) Strongly Disagree.

	Hidden knowledge and hidden action on part of seller or agent(s)	5	4	3	2	1
33	In the course of buying your apartment house, the *property seller and other intermediaries had more relevant market information* than you					
34	There was *a lot of relevant real estate market information* that was *hidden from you* by the property seller, agents and *other market intermediaries* like property agents, lawyers among others.					
35	At the time of buying your home, you found *real estate market prices* to be *too high*					
	At the time of buying your apartment house, *market intermediary charges (such as legal fees, valuation fees etc) were too high*					
36	While buying your apartment house, you encountered several *intentional malpractices* on the part of *property sellers*					
	While buying your apartment house, you encountered several *intentional malpractices* on the part of *property agents*					
37	The *property seller did not disclose* all relevant housing market information on the *true condition* of the apartment house you bought					
38	Your use of property agents (if you indeed used any of them) did not help you make good housing investment decisions considering that you had limited real estate market information					
39	Due to *lack of adequate relevant housing market information*, you at times made investment decisions using *quick, cheap and faster alternatives i.e heuristics.*					
40	When you *did not have adequate market information*, you had to rely on your *past experience in the housing market* to make quick decisions					
41	Your process of making an investment of buying your apartment home was *negatively influenced* by *limited time* on your part					
42	Having certain *beliefs about the real estate market* influenced some of your *decisions* such as your *choice of neighbourhood, location of your apartment house and your source of financing*					
43	You did not at times make *independent decisions* as you bought your apartment since some *market intermediaries (like agents ,property developers, mortgage lenders, valuers etc)* you dealt with influenced some of your decisions such as choice of neighbourhood and location					
44	In situations where you had *limited relevant market information*, you opted to use *informal sources of information like friends and relatives*					
45	On average, *you paid more for services* related to buying your apartment house since sellers, brokers and other market intermediaries had more superior information than you did					
46	*Property agents, brokers and other intermediaries* did not adequately represent your interests *despite having hired them* to represent you					
48	You actually bought an apartment *closer to your former residence* as opposed to buying one which was located far away					

Thank you so much for your participation in this research.
You can request for a final version of this research work through my email address i.e.
jobomagwa@hotmail.com

Appendix II: Apartments sold in Nairobi County, Kenya over the last 2 years

Key: ***- data not available; bdrm. - bed roomed

No.	Property Developer/Agent	Name of Apartment and Location	Size (rooms)	Asking Price
1	Crystal Valuers Ltd.	***, Lavington	4 bdrm.	18.5M
2	Crystal Valuers Ltd.	*** Kilimani, Riara Lane	4 bdrm.	18.0M
3	Crystal Valuers Ltd.	Tena Estate, Manyanja Road	1 & 2 bdrm.	
4	Makao Holdings Ltd.	Jannah Estate, 1st Ave. Bahati Estate.	***	***
5	Bluebell Properties	The Gateway, Gatundu Crescent, Kileleshwa	3,4 &5 bdrm.	
6	Villacare Kenya	Westlands Pride, opp.CCK, Waiyaki way	2 & 3 bdrm.	
7	Villacare Kenya	Malibu Gardens, Off. Msa. Road	3 bdrm.	
8		Bradford Valley, Nairobi West	2 bdrm.	
9	Bluebell Properties	Elixir, Mvuli road, Westlands.	3 bdrm.	
10	Gao Yu International Co.	***, Lavington, Hatheru Rd. ,Off. Gatanga Rd. Opp. Braeburn School.	4 bdrm.	17M
11	***	Lisa Gardens, Msa. Rd. Opp. Nation Printers	4 bdrm.	16M
12	Imara Gardens	Imara Gardens, Msa. Rd. Off GM Junction	2&3 bdrm.	6.8M ;7.8M
13	***	Green Garden Apartments, Lavington, Hatheur Rd.	3& 5 bdrm.	23M
14	Garden Real Estate Development Ltd.	The Cullinan, btn, Denis pritt and Lenana Rd, Nyangumi Rd.	1,2&3 bdrm.	10-22M
15	NWRealtime	Great Life Apartments, Kabete, Muhuri Rd.	1,2&3 bdrm.	
16	Tofina Rom Builders Ltd.	Tofina Muthama Centre, Near Syokimau Railway Terminus	Coming up	
17	Tofina Rom Builders Ltd.	***Lavington, Amboseli Rd.	***	
18	TRV Group of Cos.	Mulberry Heights Apartments, Kileleshwa, on Siaya Rd. off Gatundu Rd.	3 bdrm.	
19	***	Serenita, Ngong Rd. opp. China Centre	3 bdrm.	22M
20	Chigwell Holdings Ltd.	Phenom Estate IV, Langata	4 bdrm.	15M
21	Pam Golding Properties	Trident Park, Langata; Trident Baraka Embakasi and Golden Mile Park Ruaraka.	****	7.1M-10.5M

No.	Property Developer/Agent	Name of Apartment and Location	Size	Asking Price
22	Villacare	Duchess Park, Lavington, Hatheru Rd. ,off Gitanga Rd.	3&5 bdrm.	
23	Villacare	BelleVue Apartments Phase II, South C, near College of Insurance	2&3 bdrm.	
24	Villacare	360 degrees Court Apartments Phase II	2&3 bdrm.	
25	Villacare	Rivera Towers, Kilimani, on Chaka Rd., Nyangumi Rd.	2&3 bdrm.	
26	AMS Properties	One Westpark, Westlands, Mpaka Rd.	2,3&4 bdrm.	
27	AMS Properties	Ashton Court, Lavington, Masanduku Lane	3&4 bdrm.	
28	AMS Properties	Five Star Gardents Phase I and Phase II***	***	
29	Huss Consult	Enkasaara, Dennis Pritt Rd.		
30	Crystal Valuers Ltd.	***, Kilimani, Riara Lane.	4 bdrm.	18M
31	Crystal Valuers Ltd.	Langata Park Estate, Langata	2 bdrm.	18M
32	Crystal Valuers Ltd.	Karue Court, Kilimani	3 bdrm.	16.5M
33	Crystal Valuers Ltd.	Maryland Apartments, Waiyaki way	2&3 bdrm.	15M
34	Crystal Valuers Ltd.	Sunning Hills, Lavington	3 bdrm.	
35	Crystal Valuers Ltd.	Great South Court, Plainsview South B.	3 bdrm.	
36	Crystal Valuers Ltd.	Riverside	2 bdrm.	
37	Crystal Valuers Ltd.	Bandari Apartments, South C	3 bdrm.	
38	Crystal Valuers Ltd.	Mitco Gardens, Thika Rd.	3 bdrm.	
39	Crystal Valuers Ltd.	Imani Court, Thika Rd.	2 bdrm.	
40	N.K Brothers	Ngara Civil Servant Housing Project	2 & 3 bdrm.	
41	Ryden	Muimara Estate (Msa. Rd., Imara Daima)	2&3 bdrm.	6.5M & 10M
43	Idrata Developers	Langata Living (Langata, Ngong Forest Road)	2&4 bdrm.	
44	Hilfax Estate Agency	**** (Lavington, Valley Acarde)	3 Bdrm.	
45	Hilfax Estate Agency	Muthaiga Heights (Parklands)	3 bdrm.	
46	No Agent	(Tigoni Rd., near Yaya Centre)	3 bdrm.	
47	***	Amboseli apartments (Lavington, near Amboseli Rd.)	2 & 3 bdrm.	9M & 10.5M
48	Villacare	NorthCote Apartment, Argwings kodhek Rd.	2&3 bdrm.	23M
49	Villacare	Krishna Apartments, Lavington, Mbaazi Avenue	4 bdrm.	22M

50	Villacare	Sazit Apartments, Pangani	2 bdrm.	5.5M
51	Villacare	Makao Apartments, Langata, Ngei Estate	2 bdrm.	6.5M
52	Villacare	ELM Court Apartments, Plainsview South B	2&3 bdrm.	8.5M;9.5 M
53	Villacare	Royal Gardens, Upper Hill, Kiambere Rd.	3&4 bdrm.	16.5M;22 .26M
54	Villacare	The Great South Court, Plainsview, South B	3 bdrm.	
55	Villacare	Sheshe Gardens, Msa. Rd.	2&3 bdrm.	7M;8M
56	Villacare	Lavington Pride, Lavington, Hatheru Rd.	3 bdrm.	14.5M
57	Villacare	Golden Palms, Westlands, off School Lane	***	
58	Villacare	Bellcrest Gardens, Kileleshwa, Githunguri Rd.	3 bdrm.	20M
59	Villacare	Bellcrest Court, South B, Sore Rd.	2&3 bdrm.	8.5M;9M
60	Villacare	Ansley Park, Kileleshwa, Mugoiri Rd.	3 bdrm.	15.5M
61	Villacare	Capital View Apartments, South B, Plainsview Rd.	2&3 bdrm.	7M;8.5M
62	Villacare	Bradford Valley, Nairobi West	2 bdrm	8.5M
63	Villacare	Duke Apartments, South C	2 bdrm.	
64	Villacare	Riverland, Lavington, Riara Rd.	3-5bdrm.	15.5M-32M
65	Villacare	Malibu Court, Madaraka Estate	3bdrm.	11.5M
66	Villacare	Sunset Boulevard, Msa Rd.	1,2&3 Bdrm.	2.7,3.1& 4M
67	Tysons Ltd.	*** (Langata, Nairobi Dam)	4 bdrm.	15.5M
68	Tyson Ltd.	Riara Woods	2&3 bdrm.	13.5M & 14.5M
69	Cbre	Maryland Apartments (Westlands, Waiyaki Way)	2&3 bdrm.	15M & 15.5M
70	Cbre	Serene Valley Apartments (UpperHill, Kiambere Rd.)	2&3 bdrm.	25M & 28M
71	Property Point, HF	Precious Gardens (Riruta)	1-3 bdrm.	3.95M,5. 25&6.5M
72	Property Point, HF	*** (Msa. Road, behind JKIA Resort Club)	2&3 bdrm.	5M & 7M
73	Property Point, HF	Ramata Gardens(Ruaraka)	2&3 bdrm.	9.5M & 10.5M
74	Property Point, HF	Westmont Spring Gardens	2 bdrm	5.5M
75	Property Point, HF	Elmodo Apartments (South B, off Sore Drive)	2 bdrm	6.5 M
76	Property Point, HF	Five Star Gardens	2 &3	2- 5M

		(Msa Rd., Behind JKIA Resort)	bdrm	3-7M
77	Property Point, HF	Waterside Apartments (off Langata Rd., next to Dam estate)	3 bdrm	8.5M
78	Deluxe Homes Ltd.	Deluxe Homes Apartments (Riara Rd.,Mararo Av. Kilimani)	2&3 bdrm	***
79	HassConsult Real Estate	Legacy Apartments (Naivasha Rd., Riruta past Wanyee Rd. Junction)	1&2 bdrm	***
80	HassConsult Real Estate	The Serenita Apartments (Ngong Rd., near China Centre)	1&2 bdrm	***
81	Villa Care	KMA Apartments (UpperHill-Chyulu-Mara Rd.)	1-3 bdrm	***
82	Villa Care	Sunshine Court (Lavington, Hendred Av.Valley Acarde)	3 bdrm	***
83	Villa Care	Bamoja Apartments (South B, Sore Rd.)	3 bdrm	***
84	Villa Care	Navilla Springs (Westlands, East Church Rd.)	4 bdrm	23M
85	Villa Care	Makao Apartments (Langata, Ngei Estate)	1&2 bdrm	
86	Villa Care	Embakasi Apartments (Near Embakasi Police Station)	2&3 bdrm	

Source: Researcher, 2014

*Data obtained from the November 2013 and April 2014 Kenya Homes Expo Editions at the Kenyatta International Conference Centre (KICC).

Appendix III: Sampling of apartments across the County in terms of the 3 clusters

Clusters (Aprt.)	South B & Madaraka	Lavington	Kilele-shwa	Langata & Madara-ka	Westlands	Upperhill & Nrb. West	Total
2 bdrm.	3	0	0	2	2	2	**9**
3 bdrm.	2	1	1	2	2	1	**9**
4 bdrm.	0	2	1	0	1	1	**5**
Total	**4**	**3**	**2**	**3**	**4**	**4**	**23**

Source: Researcher, 2014

Key: bdrm.- bedroomed; **Aprt.**- apartments

Note:
- From each of the 23 sampled apartments, 10-14 households were randomly selected to form the sample size of 226 households.

- 1 and 5 bedroomed apartments were purposely excluded from the study since they are uncommon.

Appendix IV: Constituencies in Nairobi County

Nairobi County was founded in 2013 on the same boundaries as Nairobi Province, after Kenya's 8 provinces were subdivided into 47 counties.

The county is composed of 17 Parliamentary constituencies:

Constituency	Wards
Westlands	Kitisuru ·Parklands/Highridge ·Karura ·Kangemi ·Mountain View
Dagoretti North	Kilimani ·Kawangware ·Gatina ·Kileleshwa ·Kabiro ·
Dagoretti South	Mutu-ini ·Ngand'o ·Riruta ·Uthiru/Ruthimitu ·Waithaka ·
Langata	Karen ·Nairobi West ·Mugumo-ini ·South C ·Nyayo Highrise ·
Kibra	Laini Saba ·Lindi ·Makina ·Woodley-Kenyatta Golf Course ·Sarang'ombe ·
Roysambu	Githurai ·Kahawa West ·Zimmermann ·Roysambu ·Kahawa
Kasarani	Clay City ·Mwiki ·Kasarani ·Njiru ·Ruai
Ruaraka	Babadogo ·Utalii ·Mathare North ·Lucky Summer ·Korogocho ·
Embakasi South	Imara Daima ·Kwa Njenga ·Kwa Reuben ·Pipeline ·Kware ·
Embakasi North	Kariobangi North ·Dandora Area I ·Dandora Area II ·Dandora Area III ·Dandora Area IV ·
Embakasi Central	Kayole North ·Kayole NorthCentral ·Kayole South ·Komarock ·Matopeni/ Spring Valley ·
Embakasi East	Upper Savanna ·Lower Savanna ·Embakasi ·Utawala ·Mihang'o ·
Embakasi West	Umoja I ·Umoja II ·Mowlem ·Kariobangi South ·
Makadara	Maringo/ Hamza ·Viwandani ·Harambee ·Makongeni ·
Kamukunji	Pumwani ·Eastleigh North ·Eastleigh South ·Airbase ·California ·
Starehe	Nairobi Central ·Ngara ·Pangani ·Ziwani/ Kariokor ·Landimawe ·Nairobi South ·
Mathare	Hospital ·Mabatini ·Huruma ·Ngei ·Mlango Kubwa ·Kiamaiko ·

Source: Nairobi County Website, 2014

Appendix V: Tests of Hypotheses

Research Objectives	Research Hypotheses	Data Analysis Method
i) To determine if demographic characteristics significantly influence real estate investment decisions amongst apartment households in Nairobi County, Kenya.	H_1. Demographic characteristics do not have a significant influence on real estate investment decisions amongst apartment households in Nairobi County, Kenya.	* Multiple regression analysis, factor analysis and Cross tabulation.
ii) To determine the mediating effect of housing search on the influence of demographic characteristics on real estate investment decisions amongst apartment households in Nairobi County, Kenya.	H_2. The influence of demographic characteristics on real estate investment decisions amongst apartment households in Nairobi County, Kenya is not significantly mediated by housing search.	* Hierarchical multiple regression analysis and Factor analysis
iii) To determine the moderating effect of asymmetric information on the influence of demographic characteristics on real estate investment decisions amongst apartment households in Nairobi County, Kenya.	H_3. The influence of demographic characteristics on real estate investment decisions amongst apartment households in Nairobi County, Kenya is not significantly moderated by asymmetric information.	*Hierarchical multiple regression Analysis and Factor analysis
v) To determine if the joint influence of demographic characteristics, housing search and asymmetric information on real estate investment decisions amongst apartment households in Nairobi County, Kenya is greater than the influence of demographic characteristics on such decisions.	H_5- The joint influence of demographic characteristics, housing search and asymmetric information on real estate investment decisions by households in Nairobi County, Kenya is not greater than the effect of demographic characteristics on such decisions.	*Multiple Regression Analysis-Standard

Source: Researcher, 2014

Appendix VI: A Guide of Nairobi City Development Ordinances and Zones

(see next page)