EFFECT OF FINANCIAL LEVERAGE ON PROFITABILITY OF REAL ESTATE FIRMS IN NAIROBI COUNTY

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF A MASTER OF SCIENCE IN FINANCE SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

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DECLARATION

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

Signed……..…… Date…….....……

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D63/84389/2016

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

Signed …….. Date……

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DEDICATION

This work is dedicated to my parents, siblings and friends for the financial and moral support throughout my academic life.

ACKNOWLEDGEMENT

I am indebted to different individuals for their support and contributions towards the successful completion of this project. First to Almighty God, thank you for the wisdom and knowledge in carrying out this study, secondly to my supervisor Dr. Winnie Nyamute for her professional support, guidance, commitment, patience and encouragement throughout this endeavour. Finally, I want to recognise the assistance of all university of Nairobi academic staff who have moulded me in my academic journey this far. Thank you and may God bless you abundantly.

LIST OF ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey-Fuller
ANOVA	Analysis of Variances
APT	Arbitrage Pricing Theory
BI	Bond Index
CBR	Central Bank Rate
CMA	Capital Market Authority
CPI	Consumer Price Index
EMH	Efficient Market Hypothesis
FDI	Financial Development Index
GDP	Gross Domestic Product
KShs	Kenya Shillings
Max	Maximum
Min	Minimum
MM	Millar and Modigliani
NASI	NSE All Share Index
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Squares
PCSEs	Panels Corrected Standard Errors
REITS	Real Estate Investment Trusts
ROA	Return on Assets
VIF	Variance Inflation Factor

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ABSTRACT

Globally, a critical factor in real estate development and investment is funding and it is a fact that development in real estate sector requires huge outlay of financial resources hence access to cheap and adequate funding is necessary. The study was underpinned by three theories including resource dependency theory, real estate simulation theory and MM theory. Descriptive research design was adopted to examine the association between the exogenous and endogenous variables. The study targeted 80 Real Estate companies licensed by Nairobi County Government. The sample size was 24 real estate firms in Nairobi county Kenya selected using simple random sampling. The secondary data was extracted from annual financial reports of the selected Real Estate Firms in Nairobi Kenya for the period from 2014 to 2018 a period of five years. The study tested assumptions of classical least squares regression including Normality, multicolliniarity, serial correlation and heteroscedasticity. The study established that there was an inverse and major causal effect link existing between use of mortgages and profitability (β_1= -.1963, p-value = 0.000< α = 0.05). In addition, the study established an inverse causal effect association existing between share capital on profitability (β_2= -.001907, p-value = 0.519 > α = 0.05). The study also established a direct and significant causal link existing between retained earning and profitability (β_3= 0.007572, p-value = 0.000 < α = 0.05). In addition, there was a direct major causal effect link subsisting between firms size and profitability (β_4= 0.1843, p-value = 0.000 < α = 0.05). Finally, the study revealed a direct causal effect association between liquidity and profitability (β_5= -0.01673, p-value = 0.155 > α = 0.05). The study thus concludes that the effect of financial leverage on profitability of real estate firms was significant. Specifically, the study concluded that effect of mortgages on profitability was negative and major. There was inverse association between share capital and profitability. The study also concluded that there was direct and significant causal link existing between retained earning and profitability. In addition, the study concluded that there was a direct major causal effect link subsisting among firm's size and profitability. Finally, the study concluded that there was a direct causal effect association between liquidity and profitability. The study recommends that management of real estate should consider looking for firms that offer favorable rates on mortgages. The research also suggest that the management of firms should consider up scaling the share capital. The study also suggests that management of real estate firms to consider retained earnings critically as a source of capital for financing activities. The study also recommends to management of real estate firms to consider expanding their asset base. Finally, study suggest that top management of real estate firms to consider having adequate working capital to support their capital.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Globally, a critical factor in real estate development and investment is funding and it is a fact that development in real estate sector requires huge outlay of financial resources hence access to cheap and adequate funding is necessary. The real estate firm's performance depends on the availability of finance as well as the terms of the finances especially the borrowed finances that must be paid back to their providers (Kang, 2015). The ability of real ester sector to get enough and affordable funding is a critical influencer of the profitability of such firms globally and locally in Kenya. Real Estate leverage is concerned with the extent to which debt finances are employed in the business as a proportion of equity financing (Zhu, 2016). The financing of real estate may be equity or debt based finance. Extent to which debt are employed in a business forms the financial leverage. Financial leverage is the debt financing used in the business as a proportion of equity capital (Aliu, 2010).

The study was underpinned by three theories including resource dependency theory, real estate simulation theory and MM theory. The first theory considered was Resource Dependency Theory Proposed by Brueckner (1997). The theory advices top managers to select real estate firms to utelise a financing source that exposes the firms to limited uncertainty and encourage their independence through internal funds generation. The second theory examined was Real Estate Simulation Theory developed by Wieand (1996). This theory explains the disparity in housing finance across developing countries with a focus on Australia. Finally, the study was based on Modigliani-Miller Theorem that states that a levered firm has a higher value compared

to unlevered firm since levered firms enjoys tax shield emanating from interest on debts of the company.

1.1.1 Financial Leverage

The term describes the distribution of various sources of funding for real estate firm for starting, running and expanding operations of real estate firm. Financial leverage is finance management strategy where a business in addition to internally generated finances, utilises borrowed funding to ensure optimal returns on investment (Al-Otaibi, 2013). According to Rehman (2013), financial leverage is an activity that involves balancing the utilization of borrowed and equity financing in the acquisition of business assets. Financial leverage is the association of the owners equity and borrowed finances making up the capital structure of an organization. Financial leverage explain the sources of funding from third partiy organizations that must be repid back to providers on the maturity (Barakat, 2014). There are a number of sources of real estate financing sources that may be used by a firm including Equity, mortgage, Savings, and venture capital (Erdem & Ozorhon, 2013). Equity financing is the most popular financing source that is provided by the owners of a business establishment. Several financial institutions in Kenya have been providing debt financing to real estate developers in developing countries in general and Kenya in particular, this is also the practice in developed economies (Song & Liu, 2017).

Real Estate Venture capital is an investment in development of real estate that is mainly targeting new promising real estate investment project. The venture capital financing is generated from the public and private individuals into a pool of funds. The funds generated is ear marked for investment into promising highly growing real estate ventures (Keuschnigg, 2014). Real Estate Saving is the portion of income not spent on the current expenditure, it is a deliberate plan by a

developer or a firm to put aside some amount to use in future for real estate development. According to classical economists such as Dijkstra, Garcilazo and McCann (2015) maintained that retained earnings and saving are very critical to real estate development as the financing source is the cheapest funds available to any real estate firm. Real Estate Mortgage financing is where an individual, firm or a real estate developer acquires a loan to purchase or construct a house. This amount can be awarded to the developer upon the payment of a deposit or full advance payment (Petrovčić, 2013).

1.1.2 Profitability

In business, the term is explained as the cash gained by a business after deducting operational costs and relevant taxes. Profitability of the business is anchored on various factors such as business exports, business debts, age, size and growth of the business expressed in sales increase (Ouma, 2012). Profitability of a business is majorly quantified using ROA and ROE. Profitability of a business is the single most used global measure of financial performance of a business. ROA as an aspect of profitability quantifies the extent to which a business uses business assets to result to profits. Receiving and collecting profits from the investments by shareholders is measured by ROE. Vijayakumar and Devi (2011) noted that the measure of the business rate of making profit is referred to as profitability. A profit can be defined as the difference of the excess of revenue after all the deductions have been made.

A high dividend payout is only done only if the company receives a good return from their investments. In that sense therefore, profitability can be expressed as the measure of the company's capability to produce enough returns from the invested capital (Owino, 2014). Consequently, the companies now look forward to efficiently using assets to generate profits.

Evaluation of the returns is done in relation to the financing sources. Creditworthiness of the company is determined by its profitability. The main objective of the business is to make profit that benefit its owners and a business that fails to meet its objectives finds it difficult to survive (Kung'u, 2015). A highly well performing business makes large profits from their investments and therefore large returns to the owners. One role of the managers in the companies is to ensure that the companies make profits.

1.1.3 Financial Leverage and Profitability of real estate firms

From the theoretical and empirical review, Scholars have generally studied the association existing between profitability and financial leverage, however; the findings are mixed. Profitability and financial leverage were majorly related and that there was a major difference between firms that practised earning management and those that did not (Fengju, Fard, Maher & Akhteghan, 2013). In addition, Aziidah (2017) established a direct link existing between leverage and profitability. Shubita and Alsawalhah (2012) established firms in Israel that enjoyed high profitability tended to be those with heavy dependence on equity financing and that the link subsisting between profitability and equity financing was direct. Adetiloye (2012) revealed a direct and major link existing between overall performance and capital structure. Tayyaba (2013) revealed that profitability and leverage companies in Pakistan were major and significant and that the relationship was inverse meaning usage of debt finance is associated with falling profitability.

Rehman and Anjum (2013) revealed a direct link between subsisting between financial leverage and profitability. Raza, Abu and Noor (2013) showed that that the link between leverage and performance was inverse. Tsuji (2013) established that the link between leverage and profitability was inverse. Omai, Memba and Njeru (2018) showed that leverage had an inverse

relationship with profitability. Chimaleni, Muganda and Musiega (2015) revealed that loans could be adopted to finance expansion projects in firms. Kunga (2015) revealed a direct major link subsisting between profitability and financial leverage of firms that have floated common stock in Kenya. Chesang (2016) revealed that financial leverage explained profitability in a major way for firms engaged in agricultural activities that have floated shares at NSE.

1.1.4 Real Estate Sector in Nairobi

The real estate industry in Kenya has enjoyed good growth in the last decade with the trend being expected to thrive more into the unforeseeable future. A publication authored by Knight Frank in 2018, showed that the sector contributes majorly to economic growth of Kenya and currently occupying the fourth position in term of contribution to overall economic growth of Kenya. The growth in real estate has displaced the retail sector from fourth position as a sector contributing to economic growth after agriculture, wholesale and financial services even as their contribution continued to decline (National Housing Corporation, 2009). The inception of REITS by the CMA has also boosted the real estate sector has it has enabled real estate firms to generate finances from the public and the shares are easily traded at NSE.

The growth in value of real estate sector has been buoyed by stable economic growth and expansion of the middle class in Kenya. Most real estate firm operating in Nairobi have been diversifying financing sources to meet the housing demand market in Nairobi. A diversified financing source has been shown to influence profitability. The housing prices continued to growth steadily between 2013 to beginning of 2017 rising by about 19.19%. However, during the year 2017, the real estate sector experienced its worst performance since the last decade growing by marginally by 3.71%. The poor performance was majorly blamed on the heightened

political temperatures within the country leading to august 2017 elections. The four-quarter report by Haas revealed a fall in rental housing prices. In addition, the prices of land in Nairobi and neighbouring upcoming towns registered very growth and the slowest in the last seventeen-year period. The unsold houses became very difficult to offload and hence huge financial resources were tied up with them (Hass Consult Ltd , 2018).

1.2 Research Problem

There have been vast challenges in real estate development such as market failures, finances and appropriate site for the development. However, one of the greatest challenges has been choosing financing option in that real estate investments are relatively risky due to their irreversible nature, intrinsic uncertainties, and the long payback period. Research by Freire, Ferguson, Lima, Cira and Kessides (2017) highlighted the catastrophe where land development targeting low income earning have reduced majorly in most developing countries cities. The rising stress on urban land has speeded the rise in housing prices, and made housing markets mostly dysfunctional in many major municipal areas of developing countries. Real estate development is greatly dependent on the ability to finance the sector's expansion. This dysfunction can largely be attributed to the inability to access finances by the developers in addition to the challenges encountered in availing such finance (Kitavi, 2013).

Most financial institutions in Kenya apply Adjustable Rate Mortgages, which leads to variations in the monthly instalments payable for loans. Mungai (2016) also noted that increases in monthly instalments with static or declining incomes coupled with rising costs of living leads to defaults and consequently to non-performing loans. Generally, real estate investors do so with a hope of making profit or gain in their investments through cash flows or capital appreciation. Traditional

financing strategies as represented by financial institutions in Kenya do not offer favorable financial leverage to the borrowers. They have been heavily tilted towards benefiting the lender at the expense of the borrower (Muthaura, 2012).

Global Empirical studies on the link existing between financial leverage and profitability is huge. An empirical study revealed that profitability and financial leverage were majorly related and that there was a major difference between firms that practised earning management and those that did not (Fengju, Fard, Maher & Akhteghan, 2013). Aziidah (2017) studied the link subsisting between profitability and leverage of firms in South Asia establishing a direct link existing between leverage and profitability. In addition, Shubita and Alsawalhah (2012) investigated the link subsisting among capital structure and profitability establishing that high profitability tended to be those with heavy dependence on equity financing. Tayyaba (2013) examined the link existing between financial leverage and profitability of firms revealing that profitability and leverage companies in Pakistan were major and significant and that the relationship was inverse meaning usage of debt finance is associated with falling profitability. Kalpana (2014) revealed that leverage influenced the profitability of firms that have offered their shares in Bombay Stock Exchange in India.

Locally, a study investigated the link existing among performance measures and financial leverage in commercial banks that have floated their common stock at Nairobi Securities Exchange (Wabwile, Chitiavi, Douglas & Alala, 2014). Omai, Memba and Njeru (2018) on the other hand examined the link existing between share capital financing and profitability with the study revealing direct and weaker association. Chimaleni, Muganda and Musiega (2015) studied the link subsisting among debt financing initiatives and turnaround in various firms. The study

revealed that loans could be adopted to finance expansion projects in firms. Chesang (2016) on the hand on the link among financial leverage measures and profitability revealed that financial leverage explained profitability in a major way for firms engaged in agricultural activities that have floated shares at NSE. Banafa, Muturi and Ngugi (2015) examined the link existing among financial performance and leverage non-financial firms that have floated common stock at the NSE.

Although there exist large volume of studies, knowledge gaps still exist in the literature. Much of studies have been carried out in other firms that are not real estate based. Additionally, Most studies done have tended to look at the contribution of debt finance to profitability of firms with few studies examining the effect of other sources of financing like equity and venture capital. The current study therefore sought answers to the question; what is the effect of financial leverage on profitability of real estate firm in Nairobi County?

1.3 Research Objective

To establish the effect of financial leverage on profitability of real estate firm in Nairobi County, Kenya.

1.4 Value of the Study

The current research will be a crucial document for various purposes including policy, theory and practice of real estate finance. Concerning practice, the research will act as an insight to institutions involved in real estate development in identifying the impact finance options in the growth of real estate industry in Kenya. It will also provide an understanding of the implications of these options available to the developers, importance, efficiency and the convenience of acquiring different forms of finance options offered by financial institutions in Kenya. The study

is a critical document for investors in real estate sector in making decisions on the firms to invest their resources based on their leverage level.

In regards to policy, the study majorly contributors of the GDP, hence the findings will provide information to the government on where to intervene in order to provide assistance and contribute to the growth of real estate development in Kenya. The study will also provide an insight to potential investors who would want to venture in real estate particularly on raising of initial capital or working capital. The study will provide critical information that can be relied on by regulators of the sector in establishing the strategies of strengthening performance of real estate firms especially on the financing front.

Finally, regarding theory, the study is very critical to academicians and scholars in real estate financing. The study presents empirical literature on the association subsisting between profitability and financial leverage in real estate firms. The study will serve as an empirical literature for future studies on financial leverage and profitability. The study is therefore critical document for students doing postgraduate studies in corporate finance.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter elaborates on empirical on the link between profitability and financial leverage. The purpose of literature review was to identify theoretical and empirical gaps that the study sought to bridge. The chapter specifically described the theoretical foundations, empirical review, the determinants of profitability and conceptual framework.

2.2 Theoretical Foundations

The purpose of review of theoretical literature is to establish a priori on the association between the study variables. The study was underpinned by three theories including resource dependency theory, real estate simulation theory and MM theory.

2.2.1 Resource Dependency Theory

Brueckner (1997), developed this theory. The theory advices top managers to select the strategy for managing the relationship between their firms and external partners such that constrains and dependence is limited and firm independence encouraged. This theory is relevant in project management as it emphasizes on the significance of having many opportunities in an effort of ensuring project success. The theory cautions that dependence accruing from over reliance on one partner like a supplier can be minimised by finding alternative suppliers to the firm that is sustainable in the future. This theory is pertinent to tackle financial constraints and encouraging on the marketing approach and avenues to be used in order to guarantee that a housing project is successful. Resource dependency theory is based on the development of internal capacity of the firms in generating resources without having to be dependent on third parties (Van Witteloostuijn & Boone, 2006).

The theory noted that real estate firms are not in a position to generate adequate resources from within the firms and must rely on externally generated resources to supplement the owners' equity (Sirmon, Hitt & Ireland, 2007). The firms must therefore obtain additional resources from external parties like commercial banks to be able to survive or perform well in the environment. (Barringer & Harrison, 2000). Small and medium real estate firms in Kenya face a shortage of capital (Nabintu, 2013). Mortgage financing therefore is one method for these firms to access external funds in line with the resource dependency theory (Boot, 2000). Following such an argument, real estate firms or developers that face capital constraints can use relationship-lending strategy to generate needed financial resources.

This theory was applied by Wit (2008) and concluded that for a project to be deemed successful, the firm has to find a working formulae in working with various partners involved in real estate development from financiers, policy-making organs, developers, valuers and marketers. The theory was applied in this study due to the financial, market and government policies dependency nature of the housing projects and that developers may not wholly depend on internal funding like savings or revenue reserves but should also seek funding from other organizations

2.2.2 Real Estate Simulation Theory

The theory developed by Wieand (1996) observes the degree to which financial markets ensures access to financing for property development in various countries. The theory further explains that investment in real estate is dependent on long-term financing and that housing sectors performs bttter when the firms involved can generate adequate long-term financing. The theory also indicates that States with stronger laws for finance providers and investors, stable

macroeconomic environment, credit information systems that is deep tends to have strong housing finance schemes. This theory was used by Clements (2008), in an effort to explain the disparity in housing finance across developing countries with a focus on Australia.

Another study that applied the theory was by Berry and Hall (2005) who endeavoured to determine the aspects of public policy documents that are critical to the establishment of low cost rental housing to the public in advised economies of the world. The study explained that the stability of macroeconomic aggregates, the depth of credit information sharing and property rights and laws determined the development of housing finance especially those targeted at low-income earners. This theory was the financially relevant in ascertaining constraints that affect real estate accomplishment by focusing on mortgage characteristics such as the cost of taking out a mortgage as a financial constraint to both the developer and interested parties. Ambrose, Highfield and Linneman (2015) argued that the theory also sheds light on the effects of the subsidies by government on real cost of housing projects

2.2.3 Modigliani-Miller Theory

The theory has a major proponent in Modigliani and Miller (1958). The theory was developed in to two variant forms, the capital relevant and capital irrelevant positions. The capital relevant variant hold that the structure of capital for a firm is critical in explaining the firm value while capital irrelevant theory hold that capital structure does not affect the value of the firms. The irrelevant theory variant assumes absence of corporate taxes hence a firm does not get any value from leverage.

The relevant variant explains that the structure of capital is very critical in explaining firm's value (Hirshleifer, 1966). The theory further argues with corporate tax, organizations practise

leverage to benefit from tax exemptions. The theory further hold that optimising structure of capital of a business impacts on WACC. The equity capital tends to be cheaper compared to debt capital (Miller, 1977). Equity capital is less costly but does not give the firm the opportunity to get exception from corporate tax as all the income earned is taxed. Moreover, , debt capital gives the business an opportunity to enjoy tax exemptions as the income earned debt repayment interest is first deducted before corporate tax is charged on the profits earned. Hence, a firm that is levered (relies much on debts) pay less tax compared to fully unlevered firm firms. However, debt finance exposes the firm to risk of liquidation from financiers (Auerbach & King's, 1983). A firm must therefore find the right mixture of equity and debt financing that ensure that WACC is optimised to ensure maximum profitability.

The theory was therefore relevant for the current research as it explains the level of leverage that a real estate firm should accept. Based on the theory, the firm ought to balance equity and debt financing such that WACC of capital is at its minimum point. The firm can maximise profits when their optimal capital structure.

2.3 Determinants of Portability

A number of factors affect profitability of firms regardless of their location and place of operation. The study specifically examined the role of asset tangibility, liquidity and firm size in explaining firms profitability as presented in succeeding discussion.

2.3.1 Tangibility of Fixed Assets

The fixed assets play a vital role in determining firm's debt level, turnover and finally firms profitability. Fixed assets of the firm have bigger economic value than intangible asset, which tend to lose value quickly in case of bankruptcy and have minimal informational asymmetries.

The tangible assets are usually used as guarantee and collateral for firm's creditors in case a firm requires external financing. These external finances in turn lead to high turnover and enhance the firm's performance if efficiently utilized (Rajan, & Zingales, 1995). The tangible assets of the company comprise of all assets owned by the company that have continuing physical existence and are purposely acquired for operational use. These assets are not meant for sale to the customers and include land, buildings, plant and machinery, equipments and other fixed assets.

2.3.2 Firm Liquidity Level

Liquidity refers to the extent by which company meets its immediate obligations in full and in a timely way. Excessive liquidity lead to building up of idle resources that does not create any profits for the firm while low levels of liquidity on the other hand, lead to damage of company goodwill and lead to compulsory company's liquidation (Kodongo, Mokoaleli-Mokoteli & Maina, 2015). It cannot be doubted that every firm desires to maximize profitability by maintaining appropriate level of liquidity. However, magnifying the gains of the firm such that leverage position is affected may lead to serious trouble to the firm including financial insolvency. As a result, firm ought to keep the right level of in order to optimise their profitability (Vieira, 2010). The inability of the firm to maintain sufficient liquidity level can make the company insolvent and jeopardize its operations (Goyal, 2013).

2.3.3 Firm Size

Empirical studies have tended to establish direct link existing between profitability and firm size. Doğan (2013) established that larger firms have access to wide asset base hence can use the assets to generate more revenues hence high profitability. Large firms can additionally leverage on the large-scale operation to minimise average cost of operation and optimise output and sales.

Firm size has been continuously been measured using total assets and firm growth proxies. He, Fayman and Casey (2014) in the examination on causal effect link existing between profitability and firm size revealed a direct link between size of the firm profitability level of the firm. The study further explains profitability of firms is direct function of firm size measured using assets as the proxy for firm size.

2.4 Empirical Studies

Empirical studies exist globally, regionally and locally on the influence financing diversification on profitability of firms.

2.4.1 Global Studies

Global studies exist on financial leverage. Fengju, Fard, Maher and Akhteghan (2013) examined the association existing among firms' financial leverage and profitability for firms that have floated shares in Tehran Stock Exchange. The findings showed direct and stronger link exiting among profitability and financial leverage. Aziidah (2017) studied the link subsisting between profitability and leverage of firms in South Asia. The study established a direct and stronger association existing among leverage and profitability. On the other hand, Shubita and Alsawalhah (2012) investigated the association existing among structure of capital and profitability. The study established firms in Israel that enjoyed high profitability tended to be those with heavy dependence on equity financing.

Adetiloye (2012) examined the link subsisting among structure of capital of firms and profitability. The study revealed a positive link between overall performance and capital structure in SMEs. The study further showed that the association among firms' capital mix and performance of SMEs were majorly. Tayyaba (2013) studied the link existing among

profitability and financial leverage. The research revealed an inverse and major link between frims' profitability and leverage in Pakistan. Rehman & Anjum (2013) studied the association existing among firms' financial performance and financial leverage. The research revealed direct causal effect link between financial leverage and profitability.

Raza, Abu and Noor (2013) examined the causal effect link existing among firm' financial performance and leverage. An inverse link existing leverage and performance was inverse. A study carried out by Tsuji (2013) examined the causal effect association among structure of capital and profitability for firms that have floated shares in Tokyo Stock Exchange. The study established an inverse link between leverage and profitability. Shamaileh and Khanfar (2014) examined the association obtaining among firms' profitability and financial leverage revealing that a direct link between financial leverage and profitability in firms that have floated shares in Jordan. Another empirical study Nigeria examined the link subsisting among firms' profitability and financial leverage (Uluyol, Lebe & Akbas, 2014) revealing an inverse association between ROE and financial leverage.

A study carried out by Kalpana (2014) analysed the link obtaining among firms' profitability and leverage. The study was able to reveal that leverage influenced the profitability of firms that have offered their shares in Bombay Stock Exchange in India. Al-Tally (2014) on the other hand studied the link subsisting among firms' financial leverage and firms performance based on profitability. The research revealed that firma with lower leverage outperformed firms with higher leverage during periods of stable economic situations in the country. Another study was carried out in Karachi studied the link existing among leverage, cost adjustments and

performance (Khalid, Ali, Baloch, and Ali, 2014). The research findings showed that ROE and leverage were inversely related in firms with shares at Karachi Stock Exchange.

Study by ALghusin (2015) was interested in establishing the link between subsisting among profitability, growth and financial leverage of firms in Jordanian revealing a major association existing between firms' leverage, growth, size and profitability. Silambarasan and Azhagaiah (2015) investigated the association and factors influencing financial leverage of firms that have offered shares in Indian stock exchange market. The research showed that operating leverage and profitability had a major relationship that was inverse meaning improved leverage level led to reduction of profitability.

2.4.2 Local Studies

Locally in Kenya, an investigation on the link among firms' financial leverage and performance commercial banks that have floated their common stock at NSE (Wabwile, Chitiavi, Douglas & Alala, 2014) revealing inverse and insignificant association between financial leverage and profitability. Omai, Memba and Njeru (2018) on the other hand examined the link obtaining between firms' equity financing and profitability. The research revealed inverse association among firms' profitability and equity financing. In addition, the relationship was not a major one hence insignificant. Chimaleni, Muganda and Musiega (2015) studied the link existing among debt financing and turnaround in various firms. The study revealed that loans could be adopted to finance expansion projects in firms. Kunga (2015) also studied the link subsisting among firms' profitability and financial leverage for firms that have floated common stock in NSE in Kenya. The research showed an inverse link between profitability and financial leverage.

Chesang (2016) on the hand investigated the causal effect link existing among firms' profitability and leverage. The study revealed that financial leverage explained profitability in a major way for firms engaged in agricultural activities that have floated shares at NSE. The research further showed that debts to equity ratio affected profitability in a major way and that noncurrent liability was not related to profitability in aby way. Muchai (2016) also studied the causal effect association existing among firms' leverage and profitability. The study showed that performance was affected by financial leverage of manufacturing firms that have offered their shares to the public via the NSE. In addition, the association was inverse meaning that reliance on debt finance leads to falling profitability.

Banafa, Muturi and Ngugi (2015) studied the causal link existing between firms' financial performance and leverage non-financial firms at NSE. The study revealed that financial performance and financial leverage were inversely related. In addition, the effect was a significant one. Mule and Mukras (2015) also examined the link among firms' leverage, ownership structure, tangibility of assets and performance of companies that have floated common stock at NSE. The study revealed that the link existing among the variables was strong and that the association was inverse implying rising leverage was associated with falling financial performance. Abwile et al. (2014) studied on the linking between usage of dent finance and financial performance for firms that have floated common stock at NSE revealing a major link among firms' financial performance and leverage.

2.5 Conceptual Framework

Conceptual framework exemplifies the association existing between the major variables of the study that is dependent, independent and control.

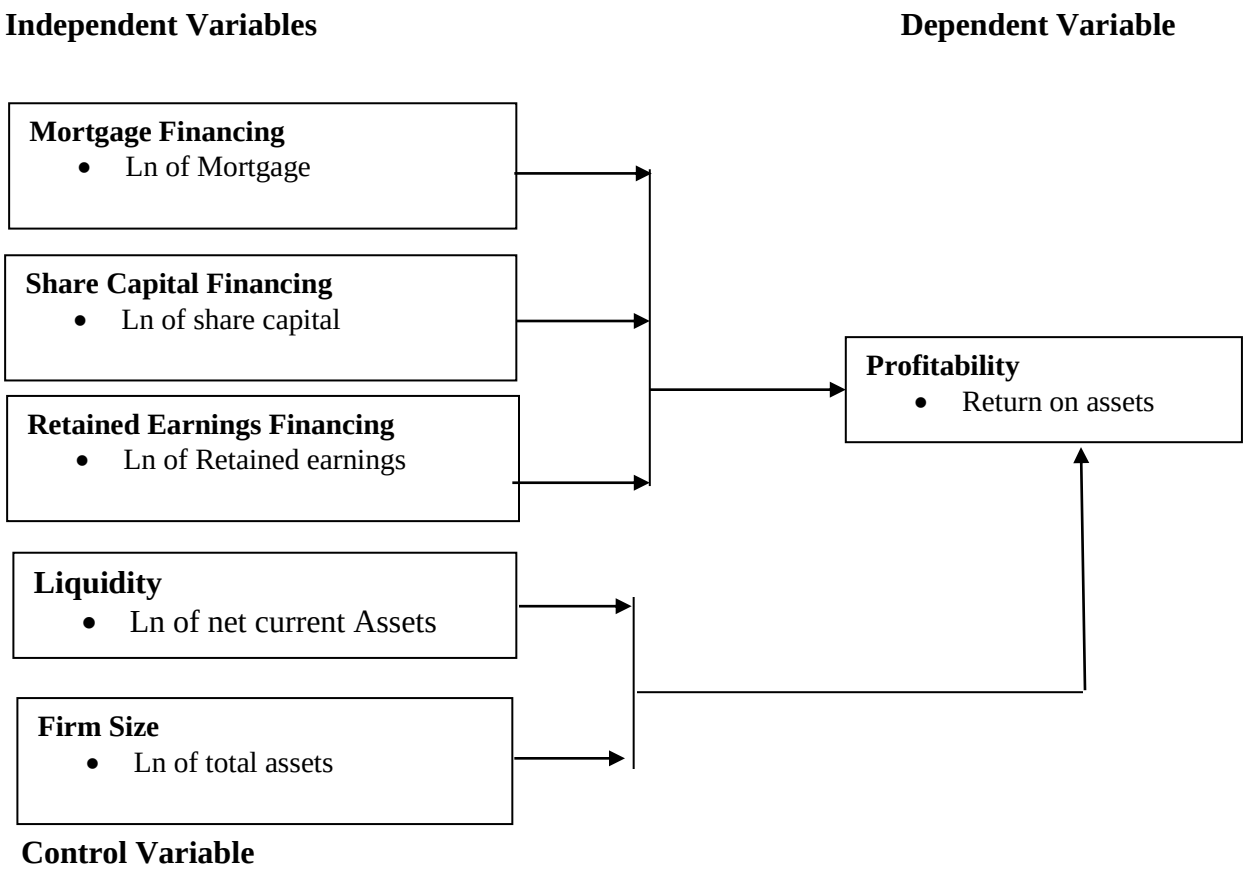

Figure 2.1: Conceptual Framework

In the figure 2.1, the independent variable was financial leverage (Mortgage, share capital and retained earnings), the dependent variable was profitability and the control variables are liquidity and firm size.

2.6 Summary of the Literature Review

The chapter has reviewed empirical literature on the association between financial leverage and and profitability of firms. Aziidah (2017) established a direct and stronger association existing among leverage and profitability. Tayyaba (2013) revealed an inverse and major link between frims' profitability and leverage in Pakistan. Kalpana (2014) revealed that leverage influenced the profitability of firms that have offered their shares in Bombay Stock Exchange in India. Al-

Tally (2014) revealed that firm with lower leverage outperformed firms with higher leverage during periods of stable economic situations in the country. Study by ALghusin (2015) revealed a major association existing between firms' leverage, growth, size and profitability. Silambarasan and Azhagaiah (2015) showed that operating leverage and profitability had a major relationship that was inverse meaning improved leverage level led to reduction of profitability. Omai, Memba and Njeru (2018) revealed inverse association among firms' profitability and equity financing. In addition, the relationship was not a major one hence insignificant. Chimaleni, Muganda and Musiega (2015) revealed that loans could be adopted to finance expansion projects in firms. Chesang (2016) revealed that financial leverage explained profitability in a major way for firms engaged in agricultural activities that have floated shares at NSE. Muchai (2016) showed that performance was affected by financial leverage of manufacturing firms that have offered their shares to the public via the NSE.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter discusses the techniques employed in collecting and analyzing relevant data. The chapter has expounded on the population of concern, the data collection methods and procedure and data analysis techniques.

3.2 Research design

Descriptive research design to examine the association between the exogenous and endogenous variables. Descriptive design is preferred when the researcher does not wish to manipulate the environment where data is collected. The design enables collection of data about phenomena from the natural environment without manipulating any condition in the environment. The design enabled the study to examine the causal link existing among firms' financial leverage and profitability of real estate firms in Nairobi Kenya.

3.3 Population

The study targeted 80 Real Estate companies licensed by Nairobi County Government (Appendix ii). Population includes all the elements that the study is interested in and upon which generalization was based on (Mugenda & Mugenda, 2009). The study focused on major real estate firm that have audited financial statements.

3.4 Sample

The sample size was 24 real estate firms in Nairobi county Kenya. The sample was 30% of target population of 80 firms. Mugenda and Mugenda (2009) explained that that, a sample size of 30%

of the population is adequate if the population is less than 500. The study further selected the 24 firms using simple random sampling.

3.5 Data Collection

The secondary data was extracted from annual financial reports of the selected Real Estate Firms in Nairobi Kenya. The data collected were recorded on data collection sheets. The data collected was from 2014 to 2018 a period of five years. The data for Independent variables financial leverage was extracted from balance sheet of individual real estate firm. The sample real estate firms were requested to provide their financial statements to facilitate extraction of the data to use in the study. The data collected was captured in data collection sheet in excel format for the purpose of data analysis.

3.6 Diagnostic Test

The study tested the following assumptions of Classical Least Squares regression including Normality, multicolliniarity, serial correlation and heteroscedasticity.

3.6.1 Normality

In statistics, normality refers to the quality of data such that the residuals exhibit normal distribution such that the mean and median are equal. Normally distribution is an assumption for the use of classical least squares for purpose of parameter estimation. Normality was tested using Shapiro-Wilk W test. A p-value greater than 0.05 signify normally distributed residuals (Garson, 2012)

3.6.2 Muilticollinearity:

Multicolliniarity is a quality of quantitative data where the regressors are correlated among themselves (Gujarati, 2003). Presence of Multicollinarity leads to inflated parameter estimates

such that the parameter are misleading. The study adopted Variance Inflation Factor (VIF) to examine the existence of multicollinearity problem where a VIF of 10 and above indicates presence of multicollinearity problem.

3.6.3 Homoscedasticity:

Homoscedasticity is a quality of data where the difference between variance of the sample and population are not significant. When residuals have constant variance, the residuals are said to be homoscedastic. Breusch-pagan / cook-Weisberg was used to test the presence heteroscedasticity problem. A p-value greater than 0.05 level of significance implies absence of heterogeneity.

3.6.4 Serial correlation

The study also tested the presence of serial correlation to ensure that the residuals of the unobserved variables are not highly correlated with over time. The study employed Wooldridge test of serial correlation where p-values less than 0.05 level of significance signify presence of serial correlation.

3.7 Data Analysis

Data recorded on data collection sheet were keyed into excel spreadsheet. The variables of the study were then generated using excel 2013. The data was then exported to STATA version 14. Minimum, standard deviation, maximum, mean and graphical presentation was used as descriptive statistical analysis. The panel data regression was used to examine the association between financial leverage and profitability of real estate firms in Nairobi county Kenya. The study adopted panels corrected standard errors (PCSEs) model since the classical least squares panel data model was disqualified due to problem of unit roots in the data.

3.7.1 Regression Model

The study utilized panel data regression model shown in equation (1). The regression model was used to examine the effect of financial leverage on profitability of real estate firms in Nairobi Kenya.

$$Y_{jt} = \beta_0 + \beta_1 X_{1jt} + \beta_2 X_{2jt} + \beta_3 X_{3jt} + \beta_4 X_{4jt} + \beta_5 X_{5jt} + \varepsilon_{jt} \quad \text{.....(1)}$$

Where:

Y = Profitability measured using Return on equity (ROA)

X_1= Mortgage Financing measured by natural logarithm of mortgages taken from commercial banks by the firm.

X_2= Share Capital financing measured by natural logarithm of share capital of the firm.

X_3= Retained Earnings Financing measured by natural logarithm of retained earnings of the firm.

X_4 and X_5 = are the Control variables

X_4 = Firm size measured by natural logarithm of total assets

X_5= Liquidity of the firm measured by natural logarithm of net current assets.

β_0= is the intercept term.

β_1- β_5 are the coefficient of explanatory variables.

ε=Error term.

t= current time that is 2018, 2017, 2016, 2015 and 2014

j= Real Estate firms

3.7.2 Test of Significance

The causal effect link existing among firms' financial leverage and profitability was examined at 0.05 level of significance where the p-value generated in the regression equation was compared to 0.05. If the p-value is less than 0.05 then concerned variable is said to have a significant effect on the endogenous variable.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION

4.1 introduction

The chapter presents the findings and the discussions on the influence of financial leverage on profitability of real estate firms within Nairobi. Out of the 24-sample size that the study sought from, only 20 companies gave useful data that could enable further analysis. The response rate was thus 83.3%.

4.2 Descriptive Analysis

The statistical analysis was necessary to identify the general movement of data. Descriptive analysis was necessary to establish the distribution of individual observations from the mean observation. Table 4.1 specifically presented μ_x, σ_x, min and mux as shown in table 4.1.

Table 4. 1: Summary Statistics

	Firm Size	share capital	Retained Earnings	Mortgages	Liquidity	ROA
Mean	18,080	936	641	5632	2856	-0.00028
Std.Dev	39,919	1,858	7,189	14,969	5880	0.15664
Min	38.3	0. 1	-42503	28	7.69	-0.71974
Max	187,651	7,482	18042	97928	23,231	0.23510

The table 4.1 presents the results in terms of μ_x, σ_x, min and mux of the study variables in before transformation to natural logarithm. The Return on assets was adopted to measures profitability. The mean ROA assets was -0.00028 implying that most of the firms studied were loss making that could mean most of the real estate firms are paying more expenses compared to incomes. The standard deviation was 0.156 showing the spread of the values around the mean. The minimum return on assets was -0.719 and the maximum was 0.2351. Additionally, the study also examined the distribution of mortgages use measured in Kenyan shillings. The mean mortgages

was 5.63 billion with a standard deviation of 14.96 billion Kenya shillings. The minimum mortgage was 7.693 million and the maximum mortgage was 97. 9 billion Kenyan Shillings.

Total assets was adopted as proxy for irm size. The mean for firm size was kshs. 18. billion with a SD of kshs, 39 billion, showing how individual firm sizes were spread around the mean. The minimum firm size was 38.3 million Kenyan shillings and the maximum was 187.6 billion Kenyan shillings. The share capital was measure in Kenyan shillings. The mean share capital was 936.7 million with a standard deviation of 1.85 billion Kenyan shillings. The minimum share capital was ksh. 100 thousand and the maximum share capital was kshs. 7. 48 billion.

The retained earnings was measured in Kenyan shillings. The retained earnings was Kshs.641. 6 million with a standard deviation of Kshs. 7. 189 billion around the mean. The minimum retained earning was ksh. - 425 million implying the firms was not solvent. The maximum retained earnings was kshs. 18. Billion. Finally, liquidity was measured by net current assets. The mean liqudity was kshs. 2.85 billion with a standard deviation of 5.8 billion Kenyan shillings. The minimum liquidity was 7.693 million with a maximum of 23 billion Kenyan shillings.

4.3 Diagnostic Tests

Regression assumptions tests are performed to establish the robustness of the model for purposes of forecasting. The diagnostic tests are performed to reveal the appropriateness of the statistical model. The study performed normality test, autocorrelation test, heteroscedasticity test and multicolliniarity test.

4.3.1 Normality

In statistics, normality refers to the quality of data such that the residuals exhibit normal

distribution such that the mean and median are equal. Normally distribution is an assumption for the use of classical least squares for purpose of parameter estimation. Normality was tested using Shapiro-Wilk W test. A p-value greater than 0.05 level of significance signify normally distributed residuals (Garson, 2012). The table 4.2 Presented results regarding normality of the regression residuals.

Table 4. 2: Shapiro Wilk Test

```
. swilk Mortgages Sharecapital RetainedEarn FirmSize Liquidity ROA

                    Shapiro-Wilk W test for normal data
```

Variable	Obs	W	V	z	Prob>z
Mortgages	90	0.94246	4.352	3.244	0.00059
Sharecapital	90	0.62719	28.199	7.365	0.00000
RetainedEarn	90	0.81530	13.971	5.816	0.00000
FirmSize	90	0.96465	2.674	2.169	0.01503
Liquidity	90	0.94981	3.796	2.942	0.00163
ROA	90	0.75135	18.808	6.472	0.00000

The study established that all the variables were not perfectly normal as shown by p-values less than 0.05. The normality assumption of classical least squares is violated hence the study adopted panels corrected standard errors (PCSEs) model that adjusts the standard errors and parameter estimates. The normality was further examined using normal probability plot as shown in figure 4.1, Figure 4.2, Figure 4.3

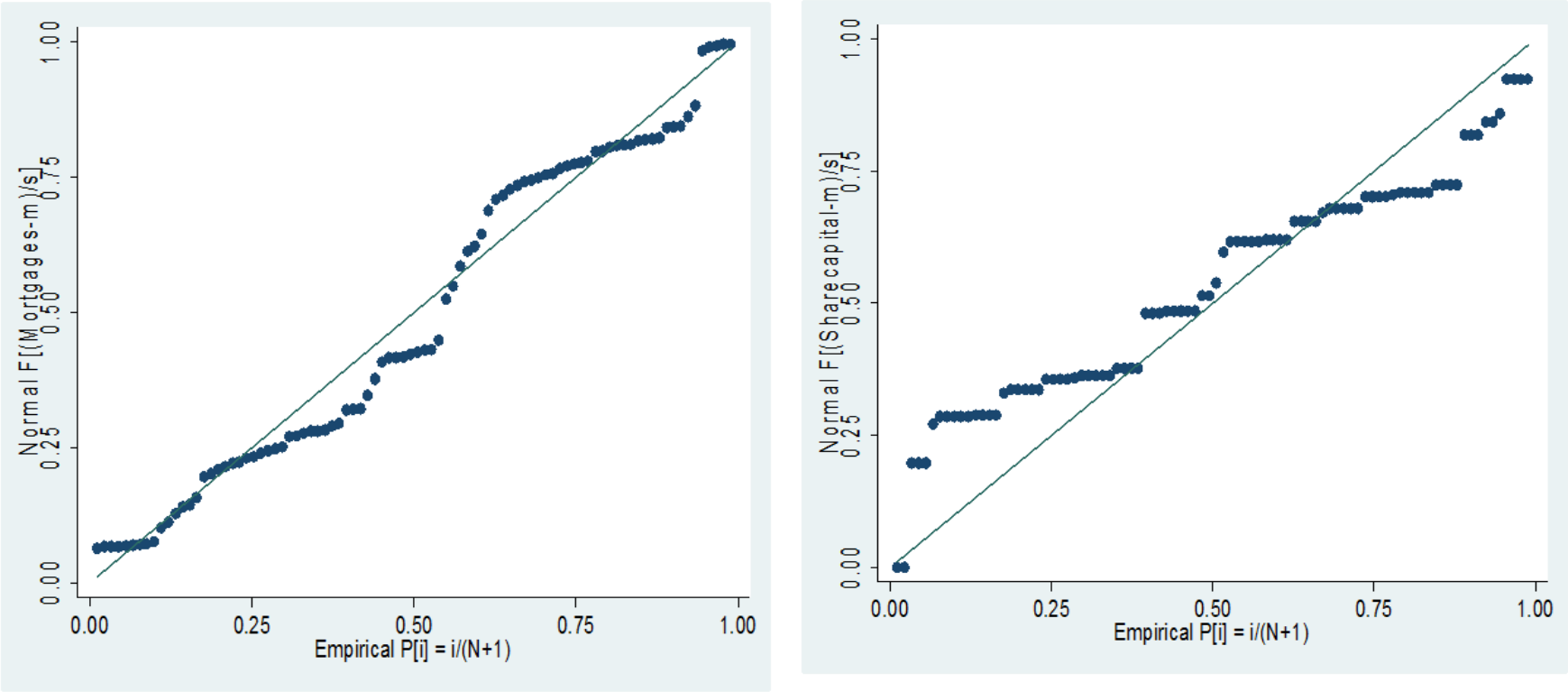

Figure 4. 1: Normal probability Plots for Mortgages and share

The figure shows that the values fell along the normal line even though the spread of the values was not perfectly normal. The study thus concludes that the mortgages and share capital were not perfectly normal.

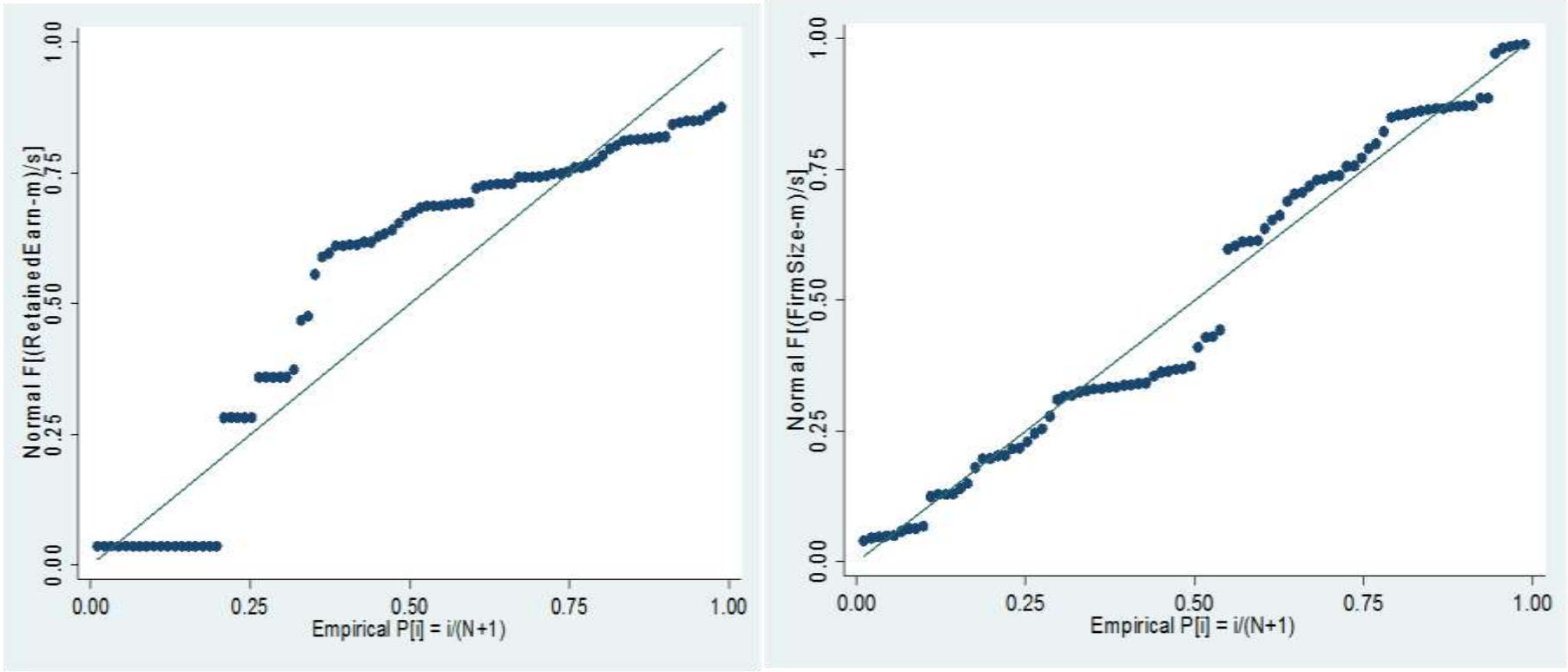

Figure 4. 2: Normal probability Plots for retained earnings and Firm size

The figure 4.2 revealed that even though the data concerning retained earnings and firm size were not perfectly normal, the values still fall along the normal probability line hence the data exhibit normality.

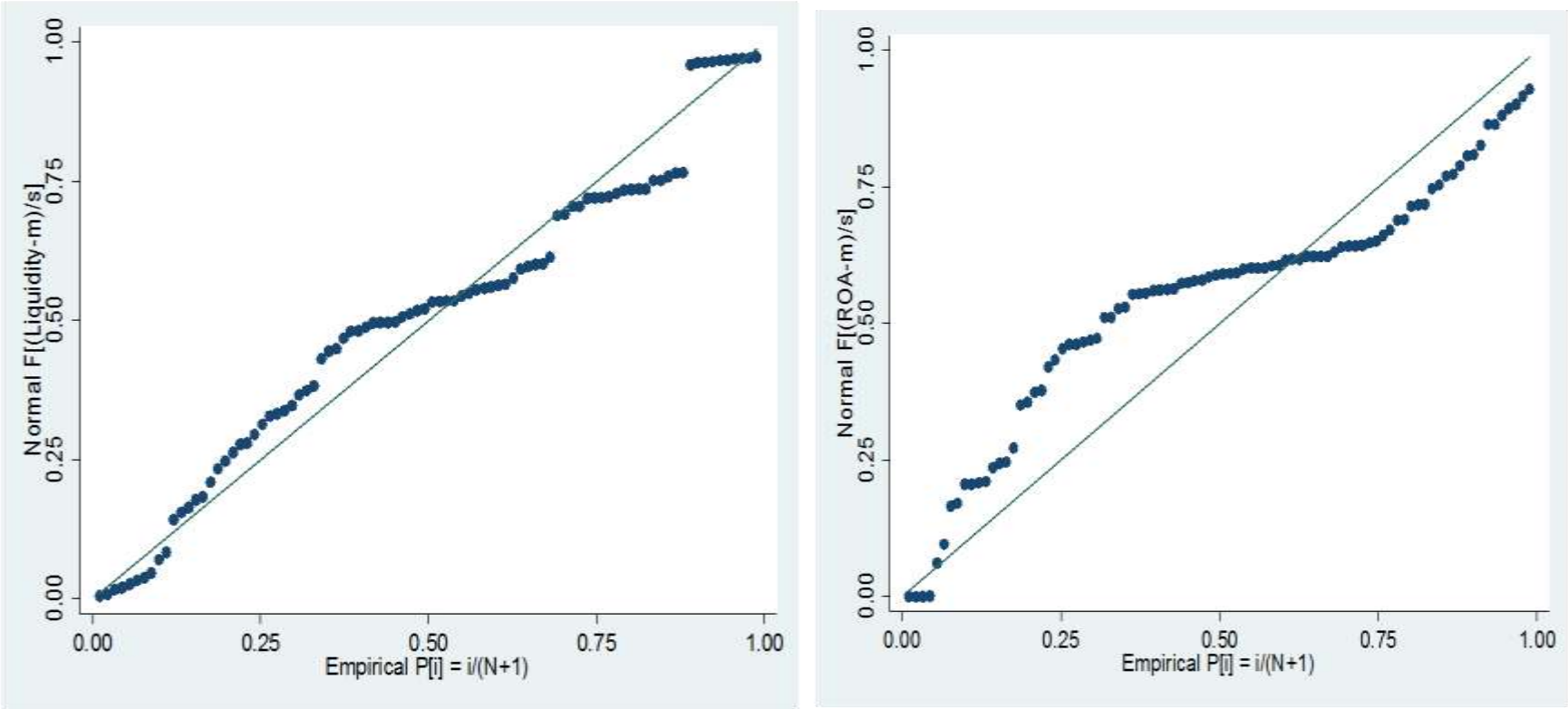

Figure 4. 3: Normal probability Plots for liquidity and ROA

The figure 4.2 revealed that even though the data concerning Liquidity and ROA were not perfectly normal, the values still fall along the normal probability line hence the data exhibit normality.

4.3.2 Muilticollinearity:

Multicolliniarity is a quality of quantitative data where the regressors are correlated among themselves (Gujarati, 2003). Presence of Multicollinarity leads to inflated parameter estimates such that the parameter are misleading. The study adopted Variance Inflation Factor (VIF) to examine the existence of multicollinearity problem where a VIF of 10 and above indicates presence of multicollinearity problem. Table 4.3 presented the results regarding multicollinearity problem.

Table 4. 3: Variance Inflation Factor

```
. estat vif
```

Variable	VIF	1/VIF
FirmSize	2.82	0.354274
Sharecapital	1.96	0.509189
Liquidity	1.79	0.559581
RetainedEarn	1.25	0.797917
Mortgage	1.18	0.849490
Mean VIF	1.80	

Table 4.3 shows that all the explanatory variables have VIF values less than 10 hence the variables are not collinear. The assumption of multicolliniarity is not violated hence the parameter estimates are not inflated hence they can be relied on for forecasting purposes.

4.3.3 Homoscedasticity:

Homoscedasticity is a quality of data where the difference between variance of the sample and population are not significant. When residuals have constant variance, the residuals are said to be homoscedastic. Breusch-pagan / cook-Weisberg was used to test the presence heteroscedasticity problem. A p-value greater than 0.05 level of significance implies absence of heterogeneity. Table 4.4 presented the results on the presence of heteroscedasticity problem.

Table 4. 4: Breusch-pagan / cook-Weisberg test

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of ROA

         chi2(1)      =    39.44
         Prob > chi2  =   0.0000
```

The table 4.4 shows that the p-value was less than 0.05 hence the assumption of no heteroscedasticity was rejected implying residuals variance were statistically significant. Homoscedasticity assumption was thus violated making classical least squares panel data model inappropriate. The study therefore adopted panels corrected standard errors (PCSEs) model that adjusts the standard errors and parameter estimates.

4.3.4 Autocorrelation test

The research also tested the assumption of serial correlation. Classical least squares require that the variables used in the study should not be autocorrelated. Serial correlation describes quality of data where variables contemporary vales are correlated with lagged values of the same variable. The study adopted Wooldridge test where a p-value less than 0.05 level of significance implies that there is serial correlation in the study variables. Table 4.5 presented results on the presence of serial correlation.

Table 4. 5: Wooldridge test of serial correlation

```
. xtserial ROA Mortgages Sharecapital RetainedEarn FirmSize Liquidity


Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
    F(  1,      17) =      9.662
           Prob > F =      0.0064
```

In the Table 4.5, the p-value generated was less than 0.05 hence the assumption of no autocorrelation was rejected meaning there was serial correlation in the study variables. The assumption of no serial correlation is thus violated making classical least squares panel data model inappropriate. The study therefore adopted panels corrected standard errors (PCSEs) model that adjusts the standard errors and parameter estimates.

4.4 Panel Regression Analysis

The study examined the causal link existing among the regressors and regressand. Regression analysis was carried out to establish the causal effect relationship between profitability and financial leverage. The study had five explanatory variables hence the regression was multivariate panel data in nature. Due to the problem autocorrelation and heteroscedasticity. The study rejected classical least squares panel model and adopted panels corrected standard errors (PCSEs) model that adjusts the standard errors, and parameter estimates. Table 4.6 and 4.7 presented the regression results.

Table 4. 6: Panels Corrected Standard Errors (PCSEs) model (Without control variables)

```
. xtpcse ROA Mortgages Sharecapital RetainedEarn, correlation(ar1) rhotype(dw)

Prais-Winsten regression, correlated panels corrected standard errors (PCSEs)

Group variable:   id                          Number of obs     =         90
Time variable:    year                        Number of groups  =         18
Panels:           correlated (balanced)       Obs per group:
Autocorrelation:  common AR(1)                              min =          5
                                                            avg =          5
                                                            max =          5
Estimated covariances      =       171        R-squared         =     0.3717
Estimated autocorrelations =         1        Wald chi2(3)      =      29.32
Estimated coefficients     =         4        Prob > chi2       =     0.0000
```

The coefficient of determination (R-squared) showed that financial leverage explained 37.17% of the variation in profitability. The remaining 62.83% variation in profitability is explained by control variables and unobserved variables that were not part of the study. The research further showed that the overall p-value was 0.0000 hence profitability was significantly affected by financial leverage in real estate firms in Nairobi county.

Table 4. 7: Panels Corrected Standard Errors (PCSEs) Model with control variables

Prais-Winsten regression, correlated panels corrected standard errors (PCSEs)

Group variable:	id	Number of obs	= 90
Time variable:	year	Number of groups	= 18
Panels:	correlated (balanced)	Obs per group:	
Autocorrelation:	common AR(1)	min	= 5
		avg	= 5
		max	= 5
Estimated covariances	= 171	R-squared	= 0.5014
Estimated autocorrelations	= 1	Wald chi2(5)	= 66.93
Estimated coefficients	= 6	Prob > chi2	= 0.0000

ROA	Panel-corrected Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Mortgages	-.1963941	.053709	-3.66	0.000	-.3016619	-.0911263
Sharecapital	-.001907	.0029584	-0.64	0.519	-.0077054	.0038914
RetainedEarn	.0075726	.0017872	4.24	0.000	.0040699	.0110754
FirmSize	.1843023	.0495692	3.72	0.000	.0871484	.2814562
Liquidity	.0167384	.011784	1.42	0.155	-.0063577	.0398345
_cons	-.3263147	.2019919	-1.62	0.106	-.7222115	.0695821
rho	.6522694					

The regression results presented in Table 4.7 has three components including model goodness of fit, ANOVA and parameter estimates. The model summary showed that the model (having leverage variables and control variables) was fit for analysis and forecasting. The coefficient of determination (R-squared) showed that the exogenous variables explains 50.14% of the variation in firms profitability. The remaining 49.86% variation in profitability is explained by unobserved variables that were not part of the study. The model was thus fit for purpose of forecasting. The ANOVA showed that overall p-value (0.0000) was less than 0.05 hence research concluded that financial leverage, firm size and liquidity have a major effect on profitability.

The finding is in agreement with study by Fengju, Fard, Maher and Akhteghan (2013) who revealed that profitability and financial leverage were majorly related and that there was a major

difference between firms that practised earning management and those that did not. Aziidah (2017) that established a direct association between leverage and profitability. Shubita and Alsawalhah (2012) established firms in Israel that enjoyed high profitability tended to be those with heavy dependence on equity financing. Adetiloye (2012) showed that the causal effect link existing among firms' overall performance and structure of capital in SMEs in Nigeria. Tayyaba (2013) revealed that profitability and leverage companies in Pakistan were major and significant and that the relationship was inverse meaning usage of debt finance is associated with falling profitability. Rehman & Anjum (2013) showed a direct link existing among firms' financial leverage and profitability. Further, the panel regression model was fitted in equation (1).

ROA = -0.3263 -.1963 Mortgages **-.001907** Share capital **+ 0.007572** Retained earnings**+ 0.1843** Firm size**+ 0.01673** liquidity **.....(1)**

The value of β_0 (-0.3263) gives the level of profitability when level of the explanatory variables are held constant at zero. The estimated parameters are represented by (β_1,β_2, β_3,β_4 and β_5) were further estimated as shown in the fitted model equation (1).

There was an inverse and major causal effect link existing between use of mortgages and profitability (β_1= -.1963, p-value = 0.000< α = 0.05). In addition, the study established an inverse causal effect association existing between share capital on profitability (β_2= -.001907, p-value = 0.519 > α = 0.05). The study also a direct and significant causal link existing between retained earning and profitability (β_3= 0.007572, p-value = 0.000 < α = 0.05).In addition, there was a direct major causal effect link subsisting among firms size and profitability (β_4= 0.1843, p-value

= 0.000 < α = 0.05). Finally, the study revealed a direct causal effect association between liquidity and profitability (β_5= -0.01673, p-value = 0.155 > α = 0.05).

4.5 Interpretation of findings and Discussion of Results

The section presents the interpretations and discussions on the study findings based on the regression results. The discussions are further supported by empirical literature on the specific study variables.

4.5.1 Effect of Mortgages on Profitability

There was an inverse and major causal effect link existing between use of mortgages and profitability (β_1= -.1963, p-value = 0.000< α = 0.05). The negative effect of mortgages on profitably implies that any further increased use of debt finance is counterproductive leading to falling profitability as shown by inverse relationship. Further, the findings imply that most real estate firms are extremely leveraged beyond the required level hence they are incurring more expenses including interest on mortgages that is affecting their level of profitability. Further, the effect was statistically significant meaning the impact mortgages use in financing operations of real estate firms in Nairobi was major with most development being carried out based on borrowed funds.

The finding is in agreement with study by Banafa, Muturi and Ngugi (2015) who revealed that financial performance and financial leverage were inversely related. In addition, the effect was a significant one. Tayyaba (2013) just like Banafa, Muturi and Ngugi (2015) revealed that profitability and leverage companies in Pakistan were major and significant and that the relationship was inverse meaning usage of debt finance is associated with falling profitability. A study carried out by Kalpana (2014) revealed that leverage influenced the profitability of firms

that have offered their shares in Bombay Stock Exchange in India. Finally, Kunga (2015) in agreement with current study showed an inverse link between profitability and financial leverage of various firms selected for the purpose of the study.

4.5.2 Effect of Share Capital on Profitability

In addition, the study established an inverse causal effect association existing between share capital on profitability (β_2= -.001907, p-value = 0.519 > α = 0.05). The effect was negative implying that the use of share capital on profitability was also counterproductive. The negative effect could be explained by the fact that shareholders tends to demand for dividends which is an additional cost to the firm in addition to owners tending to take cash away from the business inform of drawings with excuse of having shares in the business. Further, the effect of share capital was not statistically significant implying that the role of share capital on profitability was minimal given small amount of capital as a proportion of debts used. The findings are in agreement with empirical studies by Omai, Memba and Njeru (2018) that revealed an inverse weak association existing among firm's profitability and share capital effect on profitability at 5% level.

4.5.3 Effect of Retained Earnings on Profitability

The study also a direct and significant causal link existing between retained earning and profitability (β_3= 0.007572, p-value = 0.000 < α = 0.05). The effect was direct implying that increased use of retained earning led to increased profitability since retained earnings are the least costly finance source. The business does not have to pay for using the finance source since it is generated from within the business. In addition, the value of β_3 (0.007572) showed that for every unit increase in use of retained earnings, profitability improved by 0.007572 units. The

effect was significant implying that the secret of good performance of real estate firms in an environment where borrowed finance is expensive and unreliable given the interest rate ceiling relies on retained earnings. The findings are in congruence with Shubita, Alsawalhah (2012) who also established firms in Israel that enjoyed high profitability tended to be those with heavy dependence on equity financing, and that the association between equity financing and profitability was positive. Adetiloye (2012) revealed a strong link existing between overall performance and capital structure.

4.5.4 Effect of Firm Size on Profitability

In addition, there was a direct major causal effect link subsisting among firms size and profitability (β_4= 0.1843, p-value = 0.000 < α = 0.05). The positive effect reveals that the size of the real estate firm determined the level of profitability where increasing firm size in terms of assets led to improved profitability. Real estate firms relies on assets especially the noncurrent assets like land and machineries for development of houses. The study further showed that one unit increase in assets led to increased profitability by 0.1843 units as shown by parameter estimate (β4 = 0.1843). Further, the effect was significant implying that the ability of the real estate firms to perform better majorly depend on their asset size especially the noncurrent assets. The real estate firms needs to acquire land and machineries for development of residential and office buildings. The finding is in agreement with empirical literature by Doğan (2013) who established that larger firms have access to wide asset base hence can use the assets to generate more revenues hence high profitability. Finally, He, Fayman and Casey (2014) showed a direct link existing among firm size and profitability.

4.5.5 Effect of Liquidity on Profitability.

Finally, the study revealed a direct causal effect association between liquidity and profitability (β_5= -0.01673, p-value = 0.155 > α = 0.05). The study established a direct causal effect link implying that improved access to liquid cash was necessary for improved performance in terms of profitability of real estate firms. The estimated parameter (β_4= 0.01673) that measures the elasticity of profitability to liquidity was showed that any increase in liquidity by one unit led to improved profitability by 0.01673 units. The effect however was not statistically significant meaning that real estate firms in Nairobi are not affected greatly by liquidity issues.

Empirical literature showed that Excessive liquidity lead to building up of idle resources that does not create any profits for the firm while low levels of liquidity on the other hand, lead to damage of company goodwill and lead to compulsory company's liquidation (Kodongo, Mokoaleli-Mokoteli & Maina, 2015). It cannot be doubted that every firm desires to maximize profitability by maintaining appropriate level of liquidity. However, magnifying the gains of the firm such that leverage position is affected may lead to serious trouble to the firm including financial insolvency. As a result, firm should ensure adequate liquidity to optimise their profitability (Vieira, 2010). The capability of the firm to pay its maturing debts is closely related to firm's performance and existence. The inability of the firm to maintain sufficient liquidity level can make the company insolvent and jeopardize its operations (Goyal, 2013).

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter presents an over view of the results and accompanying conclusions and recommendations. The study carried out regression analysis with the objective of establishing causal effect link existing among leverage and profitability of real estate firms in Nairobi County. The chapter therefore presents the findings, conclusion and recommendations.

5.2 Summary

The effect of mortgages on profitability was negative and major. The negative effect of mortgages on profitably implies that any further increased use of debt finance is counterproductive leading to falling profitability as shown by inverse relationship. The value of the parameter (β_1 = -.1963) of mortgages shows that unitary change in use of mortgages, leads to variation in profitability by 0.1963 units. The study revealed an inverse association between share capital and profitability. The effect was negative implying that the use of share capital on profitability was also counterproductive. In addition, the parameter (β_2 = -.001907) of share capital shows that for every unit increase in use of share capital leads to fall in profitability by 0.001907 units.

The study also a direct and significant causal link existing between retained earning and profitability (β_3= 0.007572, p-value = 0.000 < α = 0.05). The direct effect implies that increased use of retained earning led to increased profitability since retained earnings are the least costly finance source. The business does not have to pay for using the finance source since it is generated from within the business. In addition, the value of parameter (β_3 = 0.007572) of

retained earnings showed that for every unit increase in use of retained earnings, profitability improved by 0.007572 units.

In addition, there was a direct major causal effect link subsisting among firms size and profitability (β_4= 0.1843, p-value = 0.000 < α = 0.05). The positive effect reveals that the size of the real estate firm determined the level of profitability where increasing firm size in terms of assets led to improved profitability. The study further showed that one unit increase in assets led to increased profitability by 0.1843 units as shown by parameter estimate (β4 = 0.1843). Finally, the study revealed a direct causal effect association between liquidity and profitability (β_5= -0.01673, p-value = 0.155 > α = 0.05). The direct effect implies that improved access to liquid cash was necessary for improved performance in terms of profitability of real estate firms. The estimated parameter (β_4= 0.01673) that measures the elasticity of profitability to liquidity was showed that any increase in liquidity by one unit led to improved profitability by 0.01673 units.

5.3 Conclusions and Recommendations

The effect of mortgages on profitability was negative and major. The negative effect of mortgages on profitably implies that any further increase use of debt finance is counterproductive leading to falling profitability as shown by inverse relationship. Further, the findings imply that most real estate firms are extremely leveraged beyond the required level hence they are incurring more expenses including interest on mortgages that is affecting their level of profitability. Further, the effect was statistically significant meaning the impact mortgages use in financing operations of real estate firms in Nairobi was major with most development being carried out based on borrowed funds.

The study revealed an inverse association between share capital and profitability. The effect was negative implying that the use of share capital on profitability was also counterproductive. The negative effect could be explained by the fact that shareholders tends to demand for dividends at the end of a financial year which is an additional cost to the firm in addition to owners tending to take cash away from the business inform of drawings with excuse of having shares in the business. Further, the effect of share capital was not statistically significant implying that the role of share capital on profitability was minimal given small amount of capital as a proportion of debts used in the various real estate firms.

The study also a direct and significant causal link existing between retained earning and profitability. The direct effect implies that increased use of retained earning led to increased profitability since retained earnings are the least costly finance source. The business does not have to pay for using the finance source since it is generated from within the business. The effect was significant implying that the secret of good performance of real estate firms in an environment where borrowed finance is expensive and unreliable given the interest rate cap, relies on retained earnings.

In addition, there was a direct major causal effect link subsisting among firm's size and profitability. The positive effect reveals that the size of the real estate firm determined the level of profitability where increasing firm size in terms of assets led to improved profitability. Real estate firms relies on assets especially the noncurrent assets like land and machineries for development of houses. Further, the effect was significant implying that the ability of the real estate firms to perform better majorly depend on their asset size especially the noncurrent assets. The real estate firms needs to acquire land and machineries for development of residential and

office buildings. Finally, the study revealed a direct causal effect association between liquidity and profitability. The study established a direct causal effect link implying that improved access to liquid cash was necessary for improved performance in terms of profitability of real estate firms. The effect however was not statistically significant meaning that real estate firms in Nairobi are not affected greatly by liquidity issues.

The study makes a number of recommendations based on study findings. Given that, the effect of mortgages on profitability was negative and major, this study recommends that management of real estate firms should consider the use of mortgages critically since increased use of mortgages is affecting the profit negatively. The firms should consider looking for firms that offer favorable rates on mortgages. The rate given should be favorable to enable the real estate firms to make profits on the different properties developed. A high interest is counterproductive as it eats into the profits made by the firms. The management of firms should also use mortgages up to a point where the WACC is at its minimal level.

Regarding share capital, given the inverse association between share capital and profitability, the research suggest that the management of firms should consider up scaling the share capital. The proportion of share capital as a ratio of assets was very low hence; their impact on profitability was low. The real estate firm's shareholders must actively inject additional share capital in to the operations of companies. In addition, the management of unlisted real estate firms should consider listing their shares at the NSE to be in a position to attract large sources of capital to build up adequate capital that can support further development of various properties. The negative effect of capital implies that management should only consider additional share capital from shareholders who will not demands high dividends otherwise it becomes unproductive as

the cost of funds may rise making business unproductive and reducing retained earning that is meant for further re investment.

Concerning retained earning, there was a direct and major causal effect link among firms' retained earnings and profitability. The study therefore recommends to management of real estate firms to consider retained earnings critically as a source of capital for financing activities. The retained earning is generated from within the business and does not have to be paid back hence; it provides the best chance for the business to expand their operations in the development of properties with no high cost attached to it. The real estate firms must increase retention ratio to help build up adequate capital stock that could be exploited to enhance profitability. In addition, the management must efficiently utilize the retained earnings otherwise; the firm will not take advantage of opportunities at their disposal especially when funds are invested unproductive ventures.

The study also established a direct major causal effect link existing among firms' size and profitability. Based on the finding, the study recommends to management of real estate firms to consider expanding their asset base. The law returns to scale state that for every additional unit of input into production process, the output rises steadily. The firms must therefore expand their scale of operations by acquiring more assets especially the noncurrent assets. The study needs large-scale noncurrent assets like land and machineries to be in a position to exploit various opportunities available. Having large-scale assets enables the real estate firms to take advantage of economies of scale such that they can lower the perf unit cost of development of various infrastructure available to them.

Finally, given that the effect of liquidity position on profitability was positive, the study suggest that top management of real estate firms to consider having adequate working capital to support their capital. The firms must draw a cash budget to enable them forecast cash needs in future with precision. The firms must have adequate liquid cash to settle bills and other obligations when they fall due. The liquidity level can be beefed up by having a line of credit with banks offering mortgages to help them settled obligations when the firms do not have adequate cash at their disposal.

5.4 Limitations of the study

Even though the current study on the causal effect link existing among firms' financial leverage and profitability of real estate firms was successfully carried out, a number limitation exist. First, the study used only secondary data which may be limiting as not all aspects of financial leverage can be captured by information on financial statements. The secondary data limited the ability of the study to capture all aspects of financial leverage.

The second limitation is that the data used relied on secondary information provided by firms. The data capturing aspects of financial leverage and profitability was used as provided by different forms. There was a possibility that the data provided by officers of the organizations may not be accurate. However, the researcher assured the firms that the data received from them would not be exposed to third party organization to ensure they give accurate data.

Thirdly, the findings of the study were limited to real estate firm operating within Nairobi County. The recommendations are therefore more relevant for real estate firms operating within Nairobi. Other real estate firms operating outside Nairobi may not readily employ the

finsindings. The management of real estate firms outside Nairobi should apply the recommendations of the study with caution.

Fourth, the study found negative relationship between share capital and profitability. The findings in this regard goes against expectation of positive relationship between share capital and profitability. The share capital being a part equity finance should have positive relationship with profitability since the finance source is less costly compared to debt finance that the firm must pay interest on the loans acquired hence the relationship should be positive.

Finaly, the study was limited to five-year period of time from 2014 to 2018. There are aspects of financial leverage that is best established using longer time series data. The shorter time period may not allow the study to examine how time factor impacts on the relationship between financial leverage and profitability of real estate firms. The long time cointegration between explanatory variables and profitability could not be captured under the current study.

5.5 Recommendations for Further Research

The study on the causal effect link existing among financial leverage and profitability of real estate firms was successfully carried out, however a number of recommendation can be suggested for other studies. First, being that the study was limited to real estate firms in Nairobi; the study recommends that another study should be carried out on real estate firms in other parts of the country. The study should be carried out using same variable to monitor if the findings are still holding when the studies are carried outside Nairobi and its environs.

Secondly, given that the study used only secondary data that may be limiting as not all aspects of financial leverage can be captured by information on financial statements. The study suggest that

other studies ought to utilize both primary and secondary data to reveal more information that cannot be obtained from secondary data alone. The use of both secondary and primary data acts as a triangulation for purpose of content validity such that aspects of the phenomena not adequately covered by secondary data is compensated in primary data collection.

Thirdly, given that the inverse causal link existing among firms' share capital and profitability, the findings in this regard goes against expectation of positive relationship between share capital and profitability. The share capital being a part equity finance should have positive relationship with profitability since the finance source is less costly compared to debt finance that the firm must pay interest on the loans acquired. The study therefore suggest that other studies should use other proxies of share capital financing to establish if the findings still hold.

Fourth, given that the current study was limited to five-year period from 2014 to 2018. There are aspects of financial leverage that is best established using longer time series data. The study therefore suggest that other studies should be carried out with data covering longer periods for instance 10-year period. The longer period would enable the study to examine how time factor impacts on the causal effect link existing among firms' financial leverage and profitability of real estate firms. The long time cointegration between leverage, control variables and profitability may now be captured when study employs long time series data.

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APPENDICES

Appendix I: Data Collection Sheet

	Mortgage	Share capital	Retained earnings	current assets	current liability	Total assets	Net operating income
2018							
2017							
2016							
2015							
2014							

Appendix II: Raw Data

id	year	**Net Profit**	**Total Assets**	**Share Capital**	**Retained Earnings**	**Mortgages**
1	2014	13,028,000.00	495,609,000.00	177,019,000.00	10,766,000.00	297,322,000.00
1	2015	229,000.00	480,525,000.00	177,019,000.00	1,095,000.00	282,009,000.00
1	2016	-77,352,000.00	477,922,000.00	177,019,000.00	-7,313,000.00	297,714,000.00
1	2017	-60,089,000.00	441,898,000.00	177,019,000.00	-199,924,000.00	321,779,000.00
1	2018	-96,939,000.00	379,576,000.00	177,019,000.00	-286,819,000.00	356,396,000.00
2	2014	1,660,000,000.00	77,432,000,000.00	2,308,000,000.00	18042000000	60266000000
2	2015	-7,864,000,000.00	122,696,000,000.00	7,482,000,000.00	13441000000	97928000000
2	2016	-3,382,000,000.00	148,657,000,000.00	7,482,000,000.00	10070000000	1.27185E+11
2	2017	-25,743,000,000.00	187,654,000,000.00	7,482,000,000.00	-15676000000	1.88026E+11
2	2018	-26,225,000,000.00	165,112,000,000.00	7,482,000,000.00	-42503000000	1.94082E+11
3	2014	2,510,300,000.00	10,677,400,000.00	392,800,000.00	5,563,100,000.00	3,353,900,000.00
3	2015	2,533,200,000.00	11,444,200,000.00	471,400,000.00	6,176,900,000.00	3,200,800,000.00
3	2016	2,460,500,000.00	11,944,300,000.00	471,400,000.00	6,765,400,000.00	3,176,200,000.00
3	2017	2,222,700,000.00	12,696,700,000.00	471,400,000.00	7,076,200,000.00	3,743,000,000.00
3	2018	1,688,900,000.00	12,174,100,000.00	471,400,000.00	6,859,500,000.00	3,471,200,000.00
4	2014	76,614,000.00	3,501,548,000.00	408,654,000.00	102,000.00	1,662,646,000.00
4	2015	164,463,000.00	4,162,469,000.00	408,654,000.00	102,000.00	2,133,894,000.00
4	2016	242,593,000.00	4,101,749,000.00	408,654,000.00	102,000.00	1,893,707,000.00
4	2017	-289,603,000.00	4,355,614,000.00	408,654,000.00	102,000.00	2,478,041,000.00
4	2018	198,521,000.00	4,404,931,000.00	408,654,000.00	102,000.00	2,328,837,000.00
5	2014	493,588,000.00	11,183,940,000.00	148,211,000.00	2,379,290,000.00	2,098,640,000.00
5	2015	451,001,000.00	13,517,985,000.00	182,174,000.00	2,575,064,000.00	1,761,950,000.00
5	2016	274,419,000.00	13,168,419,000.00	182,174,000.00	2,603,955,000.00	1,988,387,000.00
5	2017	-280,613,000.00	15,939,177,000.00	182,174,000.00	2,309,434,000.00	2,577,136,000.00
5	2018	129,328,000.00	15,815,800,000.00	182,174,000.00	2,189,362,000.00	2,705,993,000.00
6	2014	752,009,000.00	8,361,646,000.00	284,789,000.00	2,236,625,000.00	3,462,015,000.00
6	2015	867,358,000.00	12,744,583,000.00	378,865,000.00	-540,567,000.00	4,697,880,000.00
6	2016	625,476,000.00	13,284,104,000.00	378,865,000.00	-147,545,000.00	4,741,473,000.00
6	2017	478,672,000.00	12,468,479,000.00	378,865,000.00	86,598,000.00	3,864,219,000.00
6	2018	460,380,000.00	13,486,398,000.00	378,865,000.00	320,150,000.00	4,677,759,000.00
7	2014	273,977,000.00	4,941,888,000.00	1,327,133,000.00	1,330,677,000.00	2,284,078,000.00
7	2015	357,010,000.00	5,573,533,000.00	1,327,133,000.00	1,598,279,000.00	2,648,121,000.00
7	2016	384,288,000.00	6,884,853,000.00	1,327,133,000.00	2,030,181,000.00	3,527,539,000.00
7	2017	-3,930,610,000.00	6,412,996,000.00	1,824,808,000.00	-1,085,453,000.00	5,673,641,000.00
7	2018	-3,600,289,000.00	5,002,216,000.00	1,824,808,000.00	-3,922,185,000.00	7,099,593,000.00
8	2014	-22,465,000.00	612,488,000.00	58,500,000.00	225,220,000.00	323,729,000.00
8	2015	93,918,000.00	685,019,000.00	58,500,000.00	329,917,000.00	299,153,000.00
8	2016	94,933,000.00	747,531,000.00	58,500,000.00	378,050,000.00	313,211,000.00
8	2017	71,726,000.00	689,320,000.00	58,500,000.00	380,378,000.00	308,942,000.00
8	2018	104,063,000.00	1,866,944,000.00	58,500,000.00	947,567,000.00	919,377,000.00
9	2014	-38,000,000.00	1,954,114,000.00	308,896,000.00	321,219,000.00	779,647,000.00
9	2015	179,000,000.00	1,983,049,000.00	308,896,000.00	499,756,000.00	629,376,000.00
9	2016	61,403,000.00	1,961,882,000.00	308,896,000.00	561,159,000.00	550,156,000.00

9	2017	113,750,000.00	2,516,140,000.00	308,896,000.00	674,909,000.00	969,239,000.00
9	2018	-276,345,000.00	2,281,680,000.00	308,896,000.00	336,818,000.00	1,109,048,000.00
10	2014	11073800	421267650	150466150	9151100	252723700
10	2015	194650	408446250	150466150	930750	239707650
10	2016	-65749200	406233700	150466150	-6216050	253056900
10	2017	-51075650	375613300	150466150	-169935400	273512150
10	2018	-82398150	322639600	150466150	-243796150	302936600
11	2014	1411000000	65817200000	1961800000	15335700000	51226100000
11	2015	-6684400000	1.04292E+11	6359700000	11424850000	83238800000
11	2016	-2874700000	1.26358E+11	6359700000	8559500000	1.08107E+11
11	2017	-21881550000	1.59506E+11	6359700000	-13324600000	1.59822E+11
11	2018	-22291250000	1.40345E+11	6359700000	-36127550000	1.6497E+11
12	2014	2133755000	9075790000	333880000	4728635000	2850815000
12	2015	2153220000	9727570000	400690000	5250365000	2720680000
12	2016	2091425000	10152655000	400690000	5750590000	2699770000
12	2017	1889295000	10792195000	400690000	6014770000	3181550000
12	2018	1435565000	10347985000	400690000	5830575000	2950520000
13	2014	65121900	2976315800	347355900	86700	1413249100
13	2015	139793550	3538098650	347355900	86700	1813809900
13	2016	206204050	3486486650	347355900	86700	1609650950
13	2017	-246162550	3702271900	347355900	86700	2106334850
13	2018	168742850	3744191350	347355900	86700	1979511450
14	2014	419549800	9506349000	125979350	2022396500	1783844000
14	2015	383350850	11490287250	154847900	2188804400	1497657500
14	2016	233256150	11193156150	154847900	2213361750	1690128950
14	2017	-238521050	13548300450	154847900	1963018900	2190565600
14	2018	109928800	13443430000	154847900	1860957700	2300094050
15	2014	639207650	7107399100	242070650	1901131250	2942712750
15	2015	737254300	10832895550	322035250	-459481950	3993198000
15	2016	531654600	11291488400	322035250	-125413250	4030252050
15	2017	406871200	10598207150	322035250	73608300	3284586150
15	2018	391323000	11463438300	322035250	272127500	3976095150
16	2014	232880450	4200604800	1128063050	1131075450	1941466300
16	2015	303458500	4737503050	1128063050	1358537150	2250902850
16	2016	326644800	5852125050	1128063050	1725653850	2998408150
16	2017	-3341018500	5451046600	1551086800	-922635050	4822594850
16	2018	-3060245650	4251883600	1551086800	-3333857250	6034654050
17	2014	-19095250	520614800	49725000	191437000	275169650
17	2015	79830300	582266150	49725000	280429450	254280050
17	2016	80693050	635401350	49725000	321342500	266229350
17	2017	60967100	585922000	49725000	323321300	262600700
17	2018	88453550	1586902400	49725000	805431950	781470450
18	2014	-32300000	1660996900	262561600	273036150	662699950
18	2015	152150000	1685591650	262561600	424792600	534969600
18	2016	52192550	1667599700	262561600	476985150	467632600
18	2017	96687500	2138719000	262561600	573672650	823853150
18	2018	-234893250	1939428000	262561600	286295300	942690800

Appendix III: Study Variables

Id	net current Assets	LnX1	LnX2	lnX3	LnX4	LnX5	Y
1	45,981,600.00	19.5103263	18.9917676	16.1919036	20.0212979	17.6437519	0.02628685
1	77,498,800.00	19.4574495	18.9917676	13.9062649	19.9903898	18.165773	0.00047656
1	34,606,600.00	19.5116439	18.9917676	0	19.9849581	17.359555	-0.1618507
1	24770200	19.5893755	18.9917676	0	19.9065896	17.0251519	-0.1359793
1	12563400	19.691553	18.9917676	0	19.7545654	16.3462984	-0.2553876
2	21579400000	24.8220339	21.5596472	23.6159682	25.072666	23.795005	0.02143817
2	19772000000	25.3074984	22.735766	23.3215756	25.5329756	23.7075326	-0.0640934
2	21201800000	25.5689086	22.735766	23.0328265	25.7249075	23.7773519	-0.0227504
2	22032200000	25.9598461	22.735766	0	25.9578657	23.8157709	-0.1371833
2	23231600000	25.9915466	22.735766	0	25.8298899	23.8687793	-0.1588316
3	2469360000	21.9333897	19.7888111	22.4394213	23.0913952	21.6272248	0.23510405
3	2674740000	21.8866666	19.9712175	22.5440824	23.1607489	21.707118	0.2213523
3	2670260000	21.8789514	19.9712175	22.6350872	23.20352	21.7054417	0.20599784
3	2467900000	22.0431533	19.9712175	22.6800029	23.264608	21.6266334	0.17506124
3	2264960000	21.9677662	19.9712175	22.6489004	23.2225766	21.5408229	0.13872894
4	723563200	21.2316761	19.8283794	11.5327281	21.976471	20.3996985	0.02188004
4	963761600	21.4812143	19.8283794	11.5327281	22.1493742	20.6863545	0.03951092
4	956529800	21.3618021	19.8283794	11.5327281	22.1346793	20.6788225	0.05914379
4	897679800	21.6307342	19.8283794	11.5327281	22.1947314	20.615324	-0.0664896
4	963065400	21.5686348	19.8283794	11.5327281	22.2059904	20.6856319	0.0450679
5	1068792000	21.4645554	18.8141475	21.590068	23.1377447	20.7897949	0.04413364
5	1362866800	21.289687	19.0204728	21.6691402	23.3272869	21.0328563	0.03336303
5	1267442000	21.4105896	19.0204728	21.6802973	23.3010873	20.9602665	0.02083918
5	1237872000	21.6699445	19.0204728	21.5602683	23.4920459	20.9366596	-0.0176052
5	1293760600	21.7187348	19.0204728	21.506876	23.4842753	20.980819	0.00817714
6	784552600	21.9651166	19.4672591	21.5282339	22.8469211	20.4806242	0.08993552
6	767782400	22.2703772	19.7526905	0	23.2683722	20.4590169	0.06805699
6	1025032400	22.2796137	19.7526905	0	23.309834	20.7479901	0.04708455
6	1004481600	22.0750254	19.7526905	18.2767873	23.2464696	20.7277374	0.03839057
6	967014600	22.266085	19.7526905	19.5843002	23.3249475	20.6897242	0.03413662
7	2783706000	21.5492283	21.0062868	21.0089537	22.3210133	21.747049	0.05543974
7	2873728600	21.6971162	21.0062868	21.1921933	22.441295	21.7788762	0.06405452
7	2891537400	21.9838663	21.0062868	21.4313908	22.6525896	21.7850542	0.05581644
7	2291062200	22.4590969	21.3247406	0	22.5815924	21.5522814	-0.6129132
7	1285428600	22.6833033	21.3247406	0	22.3331469	20.974358	-0.7197388
8	155188600	19.5954173	17.8845373	19.2325883	20.2330399	18.8601517	-0.0366783
8	206659000	19.5164657	17.8845373	19.6143517	20.3449571	19.1465806	0.13710277
8	279366800	19.5623876	17.8845373	19.750537	20.4322863	19.4480362	0.1269954

8	169675400	19.5486641	17.8845373	19.7566761	20.3512162	18.9493978	0.10405327
8	300702400	20.6392068	17.8845373	20.6694082	21.3475687	19.5216316	0.05573975
9	497600000	20.4743518	19.5485152	19.5876337	21.3932027	20.0253071	-0.0194462
9	358400000	20.2602394	19.5485152	20.0296305	21.4079014	19.6971602	0.09026504
9	385533800	20.1257124	19.5485152	20.1455148	21.3971701	19.7701394	0.03129801
9	476659400	20.6920218	19.5485152	20.3300884	21.6459918	19.9823127	0.04520814
9	461818200	20.8267678	19.5485152	19.6350533	21.5481779	19.9506819	-0.1211147
10	39084360	16.5837773	16.1430025	13.763118	17.0181032	17.4812329	0.02234382
10	65873980	16.5388321	16.1430025	11.8203252	16.9918313	18.0032541	0.00040508
10	29415610	16.5848973	16.1430025	0	16.9872144	17.197036	-0.1375731
10	21054670	16.6509692	16.1430025	0	16.9206012	16.8626329	-0.1155824
10	10678890	16.7378201	16.1430025	0	16.7913806	16.1837795	-0.2170795
11	18342490000	21.0987288	18.3257001	20.073573	21.3117661	23.6324861	0.01822244
11	16806200000	21.5113736	19.3254011	19.8233392	21.7030293	23.5450137	-0.0544794
11	18021530000	21.7335723	19.3254011	19.5779026	21.8661714	23.614833	-0.0193378
11	18727370000	22.0658692	19.3254011	0	22.0641858	23.6532519	-0.1166058
11	19746860000	22.0928146	19.3254011	0	21.9554064	23.7062603	-0.1350068
12	2098956000	18.6433812	16.8204895	19.0735081	19.6276859	21.4647059	0.19983844
12	2273529000	18.6036666	16.9755349	19.16247	19.6866366	21.5445991	0.18814946
12	2269721000	18.5971086	16.9755349	19.2398241	19.722992	21.5429228	0.17509816
12	2097715000	18.7366803	16.9755349	19.2780024	19.7749168	21.4641145	0.14880205
12	1925216000	18.6726013	16.9755349	19.2515653	19.7391901	21.378304	0.1179196
13	615028720	18.0469247	16.8541225	9.80281888	18.6800003	20.2371795	0.01859803
13	819197360	18.2590322	16.8541225	9.80281888	18.8269681	20.5238356	0.03358429
13	813050330	18.1575318	16.8541225	9.80281888	18.8144774	20.5163036	0.05027223
13	763027830	18.386124	16.8541225	9.80281888	18.8655217	20.4528051	-0.0565162
13	818605590	18.3333396	16.8541225	9.80281888	18.8750919	20.523113	0.03830772
14	908473200	18.244872	15.9920254	18.3515578	19.667083	20.6272759	0.0375136
14	1158436780	18.0962339	16.1674019	18.4187692	19.8281938	20.8703373	0.02835858
14	1077325700	18.1990012	16.1674019	18.4282527	19.8059242	20.7977476	0.0177133
14	1052191200	18.4194529	16.1674019	18.3262281	19.968239	20.7741407	-0.0149645
14	1099696510	18.4609246	16.1674019	18.2808446	19.961634	20.8183001	0.00695057
15	666869710	18.6703491	16.5471702	18.2989988	19.419883	20.3181052	0.07644519
15	652615040	18.9298206	16.7897869	0	19.7781163	20.296498	0.05784844
15	871277540	18.9376716	16.7897869	0	19.8133589	20.5854711	0.04002186
15	853809360	18.7637716	16.7897869	15.5352692	19.7594992	20.5652185	0.03263198
15	821962410	18.9261722	16.7897869	16.6466552	19.8262053	20.5272052	0.02901612
16	2366150100	18.316844	17.8553438	17.8576106	18.9728613	21.58453	0.04712378
16	2442669310	18.4425487	17.8553438	18.0133643	19.0751007	21.6163573	0.05444634
16	2457806790	18.6862864	17.8553438	18.2166822	19.2547012	21.6225352	0.04744398

16	1947402870	19.0902324	18.1260295	0	19.1943535	21.3897625	-0.5209762
16	1092614310	19.2808078	18.1260295	0	18.9831748	20.8118391	-0.611778
17	131910310	16.6561047	15.2018567	16.3477	17.1980839	18.6976328	-0.0311765
17	175660150	16.5889959	15.2018567	16.6721989	17.2932136	18.9840617	0.11653735
17	237461780	16.6280295	15.2018567	16.7879565	17.3674434	19.2855172	0.10794609
17	144224090	16.6163645	0	16.7931746	17.2985337	18.7868788	0.08844528
17	255597040	17.5433258	0	17.568997	18.1454334	19.3591127	0.04737879
18	422960000	17.403199	16.6162379	16.6494886	18.1842223	19.8627882	-0.0165292
18	304640000	17.2212035	16.6162379	17.025186	18.1967162	19.5346413	0.07672529
18	327703730	17.1068556	16.6162379	17.1236876	18.1875945	19.6076205	0.02660331
18	405160490	17.5882185	16.6162379	17.2805752	18.399093	19.8197938	0.03842692
18	392545470	17.7027527	16.6162379	16.6897953	18.3159512	19.7881629	-0.1029475

Appendix IV: List of Real Estate Firms

1. Villa Care Kenya

2. Hass Consult

3. Lynex Holdings

4. East gate apartments Ltd

5. LlyodMasika Ltd

6. JamiaValuers&Estate Agent Management

7. Urban Bliss Realstore

8. Knight Frank Ltd

9. Milligan International Ltd

10. Regent Management Ltd

11. Neema Management Ltd

12. CB Richard Ellis Ltd

13. Alliance Realtors Ltd

14. Paragon Property Ltd

15. Lowanjo Properties Ltd

16. Urban Properties Consultants & Development Ltd.

17. Tysons Ltd

18. Norkan Investments Ltd

19. Master ways Properties Ltd

20. Cornerstone International Ltd

21. Dunhill Consulting Ltd

22. Home Africa Ltd

23. Wasco Property Consultations Ltd

30. Guardian Properties Ltd

31. Sundown Valuers & Realters Ltd

32. Axis Real Estate

33. Homelands Holdings Ltd

34. Mudas Properties Services Ltd

35. Legend Valuers& Estate Agents

36. Diversity Property Ltd

37. Kimly Properties Ltd

38. Easy Properties Ltd (K)

39. Eackelberg& Co. Ltd

40. Silverrock Properties Ltd

41. Gampr Investments Ltd

42. Colburne Holdings Ltd

43. Savannah Consulting Ltd

44. Joskinyagat Ltd

45. Ryden International Ltd

46. Real Appraisal Ltd

47. Jeankins Investments Ltd

48. Realken International Ltd

49. Heri Properties Ltd
50. Valentine First Venture(K) Ltd
51. Frank Valuers& Properties Management Ltd
52. Wakama Estate Agency Ltd
53. Terestam Properties Management Ltd
54. Paradise Properties Ltd
55. Chapter Consultants Ltd
56. Perscale Properties Ltd
57. Property Point Ltd
58. ENA Properties Ltd
59. Menga Management Ltd
60. Nile Real Appraisee Ltd
61. Maestro Properties Ltd
62. Town House Agencies
63. Etion Property Consultants
64. Add Property Consultants
65. Tuco Properties Ltd
66. Sortmaster Properties Ltd
67. Heritage Property Consultants
68. Value Build Management Ltd
69. Konaken Investment Ltd
70. Ngumo Properties Ltd
71. Elegant Investments Ltd
72. Arkpoint Properties Ltd

73. Karen Link Ltd

74. Vera Property Ltd

75. Beryt Properties Investments Ltd

76. Opus Property Ltd

77. Nairobi Homes Ltd

78. Rank Global Ltd

79. Landmark Realtors Ltd

80. Property Ins Ltd