RELATIONSHIP BETWEEN MORTGAGE INTEREST RATES AND RETURN ON INVESTMENT OF RESIDENTIAL PROPERTY INDUSTRY IN KISUMU CITY, KENYA

BY

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DECLARATION AND APPROVAL

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

Signed……..…… Date……...

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APPROVAL

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

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DEDICATION

This research work is dedicated to none other than my family; wife and children.

ABSTRACT

Globally, the demand for houses has immensely gone up in the last decade but their supply has been insufficient. Generally, real estate to a great extent relies on investment from loaned finances and the cost of financing. Housing affordability problem in Kenya is has caused many Kenyan families to spend in excess of 30-35% of their earnings on housing. This implies that property return in most circumstances are influenced by market forces of demand and supply. According to the Kenya National Bureau of Statistics, the average residential property return recorded sector records returns of 6.9%, in 2018, a 3.2% point (1.6% points annualized) decline from the 10.1% total returns recorded in May 2016. The Central Bank of Kenya (CBK) cut its benchmark interest rate to 10.5 % as of May 2016 due the exchange rate stability and inflation was expected to decline further in months that were to follow. Interest rates in Kenya have risen since 2011 after the Central Bank of Kenya (CBK) increased the Central Banking Rate (CBR) from 7% to 18% in an attempt to curb the run-away inflation and steady the dwindling shilling. The performance in residential properties is attributable to a decline in price appreciation, which dropped by 1.7% points. The disconnect that exists between the surging population growth, the biting shortage in housing and relatively low residential income has is the motivation for this research. Therefore, the purpose of this study was to assess the relationship between the mortgage interest rates and return on investment of residential property industry in Kisumu City. Specific objectives of this study were to: determine the association between the mortgage borrowing rates and return on investment of residential property industry in Kisumu City and ascertain the relationship between mortgage repayment rates and return on investment of residential property in Kisumu City. The study was anchored on the Loanable Funds, Liquidity Preference and the financial accelerator theories. A correlation research design was employed. The population of the study entailed residential property industry in Kisumu City for the period 2013-2018 involving monthly data yielding 72 data points. The study used secondary data. Secondary data was collected through desk review using a data collection form. Data was analyzed using descriptive and inferential statistics. Data is presented using tables and graphs. The findings were that mortgage borrowing rate and mortgage repayment rate significantly negatively predicts return on investment (ROI), $\beta = -.0438$ ($p = .0350$), $\beta = -0.0057$ ($p = .0353$) respectively. These values are statistically significant since the p-value is less than 0.05. The study concludes that is that mortgage borrowing interest rate and repayment rate are an important negative predictors of ROI. The recommendations of the study are that managers of residential properties in Kisumu City should negotiate for reduced mortgage borrowing interest rate as this undermines ROI and scale down mortgage repayment rate as this undermines ROI of these investments. The research may help in creating proper policy framework governing credit and the rationale of setting mortgage rates for the benefit of both lenders and borrowers. It will greatly help finance students, with rich academic materials for their research, critique and filling any gaps that may exist.

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LIST OF ABBREVIATIONS AND ACRONYMS

CRB:	Central Bank Base Rate
LOP:	Law of One Price
GDP:	Gross Domestic Product
FRM:	Fixed Rate Mortgage
KPDA:	Kenya Property Development Association
CBK:	Central Bank of Kenya
SPSS:	Statistical Package for Social Sciences
ANOVA:	Analysis of the Variance
KNBS:	Kenya National Bureau of Statistics

OPERATIONAL DEFINITION OF TERMS

Loan repayment:	Paying back the money borrowed from banks. It is the act of reversing money previously borrowed from lender
Mortgage Lending rate:	The money charged on loan received in periodicals
Interest rates:	This is a rate which is charged or paid for the use of money. It is often expressed as an annual percentage of the principal. It is the price charged for borrowed money.
Residential property return on investment:	This refers to the earning power that accrues to a residential property owner or developer. It is calculated as ratio of average earnings after tax divided by average investment outlay.

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CHAPTER ONE
INTRODUCTION

This chapter presents the background of the study, statement of the problem, general and specific objectives, hypotheses, and the scope of the study, justification and conceptual framework of the study.

1.1 Background of the Study

Housing is a major aspect of need demanded by human beings. It's also a key sector in the economy due to the impact it creates on a given country's fluctuations in output and inflation (AFDB, 2011). A research by The African Development Bank (AFDB) found that the African continent is experiencing a population boom coupled with strong economic growth rates that were registered in the past decades. In Kenya, 44.9% of the population has been accompanied by rapid urbanization and high demand for housing whose supply is not met since most people living in urban areas have a high demand for houses (AFDB, 2011).The Kenyan market has a wide gap between demand and supply of formal housing thereby affecting the prices of houses.
According to Finscope (2009), a third of houses in Kenya were inherited and just over 1.5% of houses were obtained via credit since it's so expensive to finance housing property. Over 70% of houses in Nairobi are permanent and owned by a few rich people leaving the rest of population in slums. Comparing Nairobi County to other counties, Nairobi has more permanent houses than the rest of the counties. For example most houses in Coastal region and North Eastern are semi-permanent (Finscope, 2012).

Kenya has a larger housing gap in Africa due to an increasing rural urban migration with Nairobi city leading being the capital city of Kenya. This rural urban migration has led to mushrooming of slums hence poor quality housing. One of the strategies in place to bridge a housing gap is mortgages financed by commercial banks.

However this is only affordable by high income groups who are better placed to afford the high interest rates charged by banks. Other solutions especially for low income groups such as low interest loans offered by housing microfinance and cheaper rental housing should be put in place (World Bank Report, 2011).

Everyone wants to live in a good house but most people can't afford due to mortgage access which has either higher interest rates or not accessible to some people especially in the rural areas. Rural areas have no viable market given that residents are low income earners coupled with high costs of developing a distribution network.

Most of the people who can't access mortgages from financial institutions unfortunately form a larger part of population in both urban and rural areas thus contributing to a high demand for housing which is in short supply in Kenya. This poses a great challenge in housing supply for low income earners (World Bank Report, 2011).

One of the challenges facing Kenya population especially in urban centers like Kisumu city is poor living conditions as was captured in the Integrated County Development Master Plan for Kisumu County enshrined in vision 2030.

Acquiring finance in today's mortgage market is a complicated process as it entails many procedures including seeking the best provider and comparing interest rates since high interest rates tend to increase cost thus reducing supply of housing. Borrowers are also thought to feel obliged to use their social networks for information and assistance when making decisions concerning mortgages (Pittman, 2008).

Residential property income is money consideration for transfer of ownership in goods. The income of the same good can vary due to a number of factors. As Taltavull (2003) observed, income of a house can vary from one urban area to another, even within the same urban area such as Kisumu, income may vary from one location to another.

Residential property markets are heterogeneous, with a series of geographical and sectoral submarkets that lack a central trading market. Every property is usually unique and information on the market transactions is often not available. The pricing process is usually negotiated and the market is characterized by large transaction costs. The income of an existing property should theoretically be equal to discounted present value of the expected streams of future incomes (rent), anticipated real interest rate, taxes and other structural factors. The income should equilibrate demand and

supply in a well-functioning market. The fundamental equilibrium price is the income at which the stock of existing residential property equals the replacement cost, Hilberset *et al.* (2001). Therefore, in theory a growth in income indicates growth in demand and hence a growth in the market. Several factors drive the demand of the residential property market, Karoki (2013)

Investment in residential property requires huge capital outlays, which usually is not within the reach of most real estate investors. Therefore, they turn to banks and other financial institutions for loans. Banks charge an interest rate for lending funds depending on the length of the loan and collateral. The interest rate charged to the borrower is based on the Central Bank Base Rate (CBR) which the Central Bank uses to control interest rates. Nguyen (2011) in his research, found out that interest rates have a major impact on the residential property return, i.e. the final prices that will be charged on the houses (rent). Changes in interest rates can greatly influence a person's ability to purchase a residential property. This is because as the interest rates fall, the cost to obtain a mortgage to buy a property decreases, which creates a higher demand for residential property, which pushes incomes up. Conversely, as interest rates rise, the cost to obtain a mortgage increases, thus lowering demand and income of residential property.

Property return depend on market characteristics such as vacancy level, land availability, construction supply elasticity to respond to high or low speed to changes on the demand, as well as potential for economic growth, industrial and services activities located inside urban areas, etc. Taltavull (2003). Brueggeman and Fisher (2008) argue that an important concept in real estate analysis is the fact that the house prices are highly dependent on the region or geographic area in which they are located. They further state that the demand for properties in local markets is highly influenced by the nature of the industries, businesses, and so on, that are attracted to a region.

In explaining the factors that affect housing prices, Brueggeman and Fisher (2008) give the following factors that drive demand for housing, consequently affecting incomes. These are:

First is the population growth which is expected to put pressure on housing demand and hence push incomes up. Taltavull (2003) found that population appears to have a strong significance in explaining the housing income levels.

Second, household formation which can be defined as group of people living together. Increase in household formations suggests more people getting jobs, getting apartments, getting married, having children, Thompson (2012). An increase in household formation is expected to increase demand for housing and consequently increase housing prices. Paciorek (2013) points out that one of the drivers of housing demand is the rate of new household formation which he observes has been well below trend in the United States in the recent years, hence leading to persistent weakness in the housing market.

Third is employment which is affected by the relative desirability of regions that attract businesses hence affecting the ability of households to earn income that they use to acquire housing and also affect property return?

Fourth, is household income, while employment growth is vital, the quality of jobs and the wages and salaries earned in these occupations are also important. Brueggeman argues that there is a very strong association between house price and income/employment growth.

Fifth is interest rate which when on the increase, tends to have a negative influence on housing demand. Brueggeman and Fisher (2008) argue that the magnitude of the impact of interest rate is more complex to understand because there is greater variety of mortgage loans options. Adjustable rate loans (ARMs) and other types of loans apart from the fixed rate mortgages (FRMs) provide for different rates, loan amortization periods and other features.

Lastly, the cost of renting housing also affects the price of houses. If individuals find that renting is more cost-effective than owning, homeownership may not be a good investment, Otwoma (2012). The supply of housing is determined by interest rates in a way that a rise in interest rates influences the cost of borrowing thus discouraging the potential buyers and as a result the demand of housing falls making the supply to

decrease. On the other hand when interest rates decrease, cost of housing goes down hence a rise in demand for houses (Igan *et al.*, 2011).

According to Amadeo (2012) interest is the charge at which the borrower pays back the lender for the use of the borrowed money, normally expressed as a proportion of the principal for a one year period. It's the percentage charged or compensated for use of money i.e. it is levied when the funds are being borrowed and paid when its being loaned thus makes interest rates to be referred to as cost of borrowing.

Interest rate can also be referred to the annual charge for lending funds which is specified as a fraction of the amount borrowed. There's a complex link between interest rates and housing in that when the interest rates are low, mortgage payments will be too low hence making the market affordable for homebuyers and vice versa. High Interest rates means that there are few individuals and enterprises able to afford loans thus reducing the amount of credit offered to fund expenditure which entirely slows the consumer demand (Amadeo, 2012). The impact of high interest rates is that fewer borrowers are able to meet eligibility for loan which eventually results to an increase in supply of housing while on the other hand low interest rates have the reverse consequence on the economy. These rates allow more people to purchase homes thus reducing the supply in housing since the number of houses in the market reduces thus increasing their costs. The overall expense incurred in borrowing will be affected by any change in interest rates i.e. higher interest rates have a propensity to shrink expenditures while lower interest rates are thought to result in increased expenditure (Amos, 2012).

According to Ngugi (2016), the peak mortgage interest rate accounted in 2010 was 18.50% while the least was 6.50 %. When inflation rates plunge it results in harmful consequences. For instance banks tend to show downward resistance preferring to boost their margins than reduce their lending rates. Mortgage rates were expected to have plummeted to their lowest levels yet as is the case in many advanced economies. The nonexistence of a strong connection to capital market funding and the absence of consumer price flexibility imply that banks are able to lend at rates which are significantly higher than their cost of funds. The intricacy with such a high interest According to Nzalu (2012), the fact that interest rates play an integral part in real

estate as most purchases of real estate property tend to be acquired on a mortgage basis. The cost of servicing a loan decreases with a declining interest rate environment which clearly allows households to take a bigger mortgage within their current income budgetary constraints boosting the demand for and price of housing. Interest rate is defined as a cost to the borrower mainly because it is the rate at which the borrower pays back the lender for the use of their money. For example, a small company borrows capital from a bank to buy new assets for their business, and in return the lender receives interest at a pre-determined interest rate for deferring the use of funds and instead lends it to the borrower. Interest rates are usually expressed as a percentage of the capital borrowed for a period of one year. Interest rates targets are also a vital tool of monetary policy and are taken into account when dealing with variables like investment, inflation and employment. Similarly, Amadeo (2012) in his studies found out that interest rate is the percentage charged, or paid, for the use of money. It is charged when the money is borrowed, and paid when loaned, Ann (2010)

Previous studies (Moench, Vickery & Aragon, 2011; Kipngetich, 2011) have been done on the relationship between interest rates and investment performance are have yielded mixed findings as some of the theories are generalized rather than being specific. From the empirical studies done, the relationship of interest rates and property income show a positive and also negative relationship (Njongoro, 2013; Wong *et al.*, 2003; Gregory *et al.*, 2017). For instance the study conducted by Njongoro (2013) shows a negative connection between interest rates and supply of housing. Global studies have explored the relationship between interest rates and property return extensively and they are anchored in different contextual conditions hence the diversity of findings.

Locally empirical study in the relationship between interest rates and property return is not covered widely specifically relating to the fixed and variable type of interest rates.

Empirical evidence on mortgage repayment rates emphasize on lending constraints (Godquin, 2004; Santiago and Francisco, 2005). Other studies (Tomaki, 2013; Fishman and Love, 2004) identify loan repayment policies as one of the credit

management policies adopted by financial institutions. On the contrary, other (Bhattacharya, 2011) focus on interest rate spread among financial institutions. Studies do not indicate how mortgage repayment rates relate to property return, a gap that the current study will bridge.

The real estate industry in Kenya in 2018 experienced highs and lows. The country witnessed high mortgage rates averaging between 12% and 15% and there was demand for affordable housing. Another major thing that was going on was the political unrest that took place in 2017 with the effects spilling over into 2018. There was a lot of tension in the country and investors didn't want to commit to undertaking huge, money-intensive projects. Major cities such as Nairobi, Mombasa and Kisumu have witnessed a rise in the price of property. This is because of the huge competition in workers looking for jobs that pay well. This has put a strain on the real estate market in these cities, in that, new construction is not able to keep up with the demand due to a lack of available land.

The CBK cut its benchmark interest rate to 10.5 % at its May 2016 meeting because the exchange rate was stable and inflation was expected to decline further in months that were to follow (CBK, 2016). Interest rates in Kenya have risen since 2011 after the Central Bank of Kenya (CBK) increased the Central Banking Rate (CBR) from 7% to 18% in an attempt to curb the run-away inflation and steady the dwindling shilling (Omengo, 2012).

Obongo (2015) opines that the expansion in the mortgage market was expected to decelerate but this was transitory because of an increase in interest rates. The Central Bank of Kenya's MPC raised the CBR from 8.50% to 10% in June the same year in order to stem the shilling's decline against the dollar. The mortgage sector had expected the thrust in growth registered in 2014 to be continuous in 2015 but the dwindling of the shilling meant that interest rates will go up reminiscent to the situation in 2011 when interest rates went up.

1.2 Statement of the Problem

Globally, the demand for houses has immensely gone up in the last decade but their supply has been insufficient. Generally, real estate to a great extent relies on investment from loaned finances. In general, real estate value is exaggerated by the cost of financing and as a result it impacts on the number of units demanded and the ability to afford. Housing affordability problem in Kenya is a major challenge especially for the low income earners who either the houses built are too expensive for their affordability with the average mortgage loan or the mortgage payment rates are too high for their affordability. This has caused many Kenyan families to spend in excess of 30-35% of their earnings on housing. Such families are considered to be cost laden and may have trouble managing to pay for other requirements such as provisions, clothes, transport and health care.

Property returns in most circumstances are influenced by market forces of demand and supply. However, for some reasons, the residential property market incomes in other different areas seem to be dictated by other factors, different from the market forces. Shifts in the ability or willingness of financial institutions to extend loans to borrowers can affect the cost of funds, which will ultimately dictate on property prices. Investors with a poor credit rating, is likely to be unable to secure loans from established financial institutions, and in case they do, it will be at a higher lending rate to compensate on the risk of defaulting. Subprime mortgages refer to a type of loan granted to an individual with poor credit history, who as a result of their deficient credit rating, would not be able to qualify for conventional mortgages. Because subprime borrowers present a higher risk for lenders, subprime mortgages charges interest rate above the prime lending rate. The Kenya National Bureau of Statistics has given trends on how population growth has taken place in the past three decades in Kisumu, as follow; in 1979, the population in Kisumu stood at 482,327, in the census that followed in 1989 and 2009, population stood at 662,086 and 968,909 respectively. It is projected that by the year 2019, the Kisumu county population will be 1,224,524, Kenya National Bureau of Statistics (2018) averagely; statistics show an average growth rate of 26%. From the property development perspective, Cytonn, a property development company has analyzed the average residential property return as follows; in terms of overall market performance, the residential sector records returns of 6.9%, in 2018, a 3.2% point (1.6% points annualized) decline from the 10.1% total returns recorded in May 2016. The performance is attributable to a

decline in price appreciation, which dropped by 1.7% points. The disconnect that exists between the surging population growth, the biting shortage in housing and relatively low residential income has is the motivation for this research. This study seeks to analyze whether interest rates affect residential property return in Kisumu and the effect of property prices during low and high interest rates.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of the study was to establish the relationship between the mortgage interest rates and return on investment of residential property industry in Kisumu City, Kenya.

1.3.2 Specific Objectives

The specific objectives of the research were to:

i) Determine the association between mortgage borrowing rates and return on investment of residential property industry in Kisumu City.

ii) Establish the relationship between mortgage repayment rates and return on investment of residential property industry in Kisumu City

1.4 Hypotheses

H_{o1}: Mortgage borrowing rates have no association with return on investment of residential property industry in Kisumu City.

H_{o2}: Mortgage repayment rates have no association with return on investment of residential property industry in Kisumu City.

1.5 Justification of the Study

The study is of very practical importance to the following classes of stakeholders: the study provides useful information to policy makers, market players and finance academicians on the extent to which interest rates affect real estate development in the country. The study will provide insights to policy makers and real estate players as to whether interest rates can be used as a useful tool in ensuring housing affordability in Kenya. To policy makers, the study will help in creating proper policy framework governing credit and the rationale of setting mortgage rates for the benefit of both lenders and borrowers. To finance students, the study will provide rich academic materials for their research, critique and filling any gaps that may exist.

1.6 Scope of the Study

The scope of this study in terms of spatial dimension covered the entire Kisumu City and looks into the relationship between mortgage interest rates and residential property return. This study covered the subject area for the period of 2013-2018, and sought to examine the correlation of mortgage interest rates on return on investment of residential property industry in Kisumu City. Interest rates are determined by three forces, i.e. the Central Bank of Kenya, which sets the base lending rates, investors demand for treasury notes and bonds, that affects the long term and fixed interest rates, and finally, the banking industry that offers loans and mortgages that can change interest rates depending on business needs. For example, a bank may raise interest rates if you default in honoring the repayment installments.

1.7 Conceptual Framework

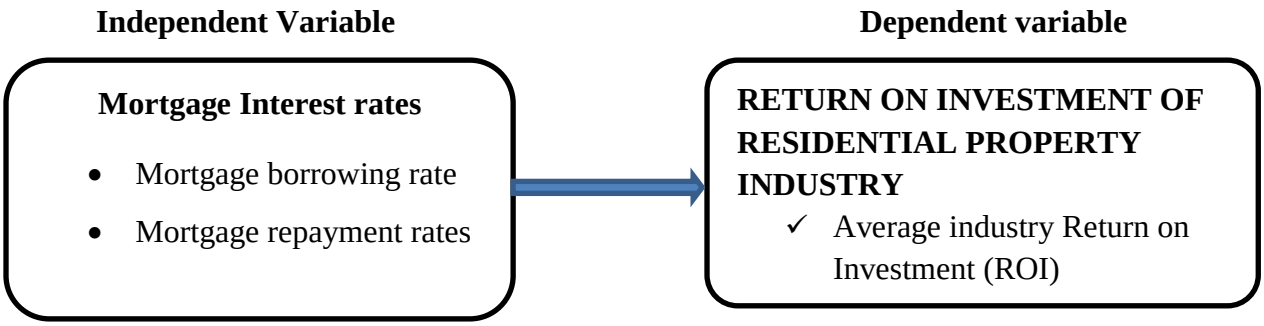

Figure 1.1: Mortgage Interest Rates and Residential Property Income

Source: Adapted from Muthaura (2010) and Maranga et al. (2017)

The conceptual framework is adapted from Muthaura (2010) and Maranga et al. (2017) by modifying it to suit the research purpose. Maranga *et al*. (2017) employ correlation research design in examining the effect of interest rates on business investment performance while Muthaura (2010) explores the relationship between interest and real estate investment. Therefore, these studies are relevant in conceptualizing this research. Concerns and aspects in Maranga *et al*. 2017 and Muthaura, 2010 are collated to two mortgage interest constructs namely mortgage borrowing rates and mortgage repayment rates. These two constructs are hypothesized to relate to return on investment of the residential property industry surrogated by average return on investment.

CHAPTER TWO
LITERATURE REVIEW

This chapter reviews both theoretical and empirical literature relating to mortgage interest rates and residential incomes

2.1 Theoretical Review

This study was guided by several theories; financial accelerator effect theory, Credit Rationing Theory, Liquidity preference theory and loanable funds theory.

2.1.1: The Fiscal Acceleration Theory (Financial Support)

It is referred to as financial acceleration theory in the financial concept on economic model. This theory tries to find details on how undersized financial shocks can be moderately large in the effects of lending as well as borrowing behavior in financial market. The premise relies on the interaction among monetary agents' netting investment value as well as the external money premium that take place due to a symmetric in order between lenders along with borrowers. The financial accelerator product on domestic expenditure occurs since households, as well as firms, invest several of their expenditures by means of money borrowing. In particular, domestic deposit usually finances investments in somewhere to live as well as purchases of other long-lasting goods through raising funds within credit market. These money transactions are too characterized through asymmetric information evils flanked by the borrowers (home) along with the lenders (banks). Consequently, households' capacity with/or conditions beneath which they are able to get hold of funds, for this reason their expenditure, are also prejudiced via their net worth. Since pragmatic in a large amount of households' borrowings are protected by real estate investment, the prose has been listening carefully above all on the effect of rate changes in residence investing values (Lacoviello, 2005).

Financial increase of rate on domestic costs as follows. An optimistic shock to financial activity causes an increase in house deposit charge, which shows the way to boost in homeowners' disposable merit. This reduce the outside finance rate, which leads to an increase in housing investments as well as spills over interested in use demand of expenses (Aoki, 2004).

In the Short-run interest rate produce variation which has usually been measured as a product of a variety of financial shocks, which are conveying diverse transmission machinery. One of the ordinary ways of thoughts concerning the invention of amount produced schedule in excess of a short-run stage is an auto regressive (AR) development (Blanchard, 2001).

Financial acceleration results to materialize outstanding in the direction of a symmetric order of difficulty that restrain the capability of banks to get hold of funds from borrowers in trade as well as in comprehensive inter-bank monetary marketplace. In view of the fact that banks come in the deposit market as borrowers given they can go insolvent as well as investors, there is no motivation to take for fixed so as to banks' capability to accumulate funds on the interest rate expenses of the funds which will not be biased through their bank resources. To the amount so as the financial shocks have an effect on banks net value it strengthens the influence of banks' ability to attract customers for loans of investing finance (Gertler, 2010).

This theory gives an option on how commercial banks deal with calculation of interest rate on loan borrowers. The cash rationing hypothesis advice that lenders has to control the amount of credit they offer away to their borrowers depending on the existing interest rates in addition to available security or reserve of collaterals. Commercial as one of the lenders will be in determination to make conclusion to let somebody borrow or not on the way to lend depending of collateral that has been existing to them as a result of a borrower. If the lenders pay out loans at far above the ground of interest rates, they pull towards riskier investments along with chances of borrowers keeping away from them to convene their reimbursement supplies. The condition of money base on other bank option to security will give borrowers opportunity of non-payment on their loans because their association with the lender is not as physically powerful when guarantee is concerned. The financial credit distribution hypothesis suggests that the benefit that interest rate is extremely momentous in the influential of the interest rate on the amount of financial investors which will be keen to lend money to determine the ability of the borrower to pay back on the investment loan (Tessie, 2009). It deals with the emotional reaction people experience after realizing they have made an error in judgment. Interest rates is a selling stock, investors become affected by the price at which they purchased stock.

So they avoid selling it as way to avoid the regret of having made a bad investment, as well as the embarrassment of reporting a loss. Regret theory can also hold true for the investors who find a stock they had considered buying but did not went up in value. Some investors avoid the possibility of feeling this regret by following the conventional wisdom and buying only stock that everyone else is buying; rationalizing their decision with everyone else is doing it (Nwangbo and Onkonkwo, 2014).

2.1.3 Credit Rationing Theory

This is a situation where demand for loans exceeds their supply and since economic theory has traditionally viewed market clearing and equilibrium as one thing, a situation where supply does not equal demand is perceived as disequilibrium and may be caused by external factor such as interest rate ceiling. Credit rationing was a seminal work of Jaffee and Russell (1976) and later developed by Stiglitz and Weiss (1981), the theory provides another framework for analyzing financial market inefficiencies. According to Stiglitz and Weiss, information asymmetry is regarded as the main cause of financial market malfunctioning in developing countries. Banks that advance loans are primarily concerned about the interest rate they receive on the loan and the riskiness of the loan. The interest rate a bank charges on loans have the tendency of affecting the riskiness of a pool of loans by either sorting potential borrowers – adverse selection effect; or affecting the behaviour of borrowers – moral hazards (Akowuar, 2011). According to Riley, (1987) credit rationing predicts that as the cost of capital rises, the bank may find it unprofitable and very risky to lend to certain groups of customers for which informational frictions are particularly large. Recent theoretical work of Chari, Chourideh and jones, (2010) and Kurlat (2010) has extended these ideas to analyze how informational frictions affect the availability of credit during a financial crisis.

2.1.4 The liquidity Preference Theory

The theory gives facts which are predictable in raising capital to promote investment through Keynes. The favorite decision is of those investors who have a preference for better liquidity payable together with interest intimidation as well as defaulting turn over to maturity rates. Owners of long-term liquidity set in the danger that interest rates will increase during the payment period building their permanent rate in

investments less priceless. Likewise adverse changes in the monetary conditions of the business are also a principle of time today certain than tomorrow, subsequently month is further convinced than subsequently as well as the opportunity of nonpayment increases period. Investors are as a result to lowly rate only on the through expression as well as most liquid investments (Cartel, 2004).

The theory of liquidity holds that long- term business securities should give higher returns than short term debt since investors are willing to give up a number of ways to spend in short loan obligations to keep away from the higher charge instability of extensive maturity rates (Reily, 2006). An increased partiality for liquidity within the interest rate model is as good as demand for money which increases more customers who believe interest rates are predictable to increase profits than credible go down. On the further, banks give borrowers a chance in their way only to invest where returns are on their asset not to go beyond the borrowing rates (Bain, 2007).

2.1.5 Loanable Funds Theory

Loanable funds theory assumes that interest rates are determined by supply and loanable funds and demand for credit, Fry (1995). In loanable funds theory, the demand of loanable funds originates from domestic investors, consumers, government and foreign borrowers. If the banks are in a hurry to lend money without establishing the credit worthiness of individuals, then the default rate increases and hence business risks which make banks to charge a higher premium to compensate for the default risk. Supply is generated by domestic savings, dispersion of money balances, and money creation in the banking system and foreign lending. The market structure in which the banks concentrate on determines the supply of funds which in turn determines the availability of loanable funds, IBM (2010).With these factors determining long term interest rates, short term interest rates are decided by financial and monetary conditions in the economy, Wanjiru (2015).

More funds are borrowed at lower rates of interest than at higher rates. On the other hand, supply of loanable funds comes from savings, dishoarding, and bank credit. In this theory, savings are seen as providing the supply of loanable funds and releasing resources from the production of current consumer goods into the production of capital goods. Investment on the other hand is seen as providing the demand for

loanable funds. The higher the rate of interest, the more the household and individuals will be willing to save and so sacrifice some present consumption for future consumption, Shapiro et la (1992). A basic conclusion of the theory is that falling interest rate will induce greater investment to take place. Thus, income, consumption and savings, all apply to the same period.

2.1.6 Mortgage Borrowing Rates

This is the rate expressed as a proportion of the principal amount borrowed that a borrower has to pay back to the lender for using the borrowed funds over a given time period normally a year. It's the percentage charged or paid for use of money i.e. it's charged when the money is being borrowed and paid when its being loaned thus makes interest rates to be referred to as cost of borrowing (Amadeo, 2012).

High interest rates tend to raise cost of mortgage payments hence lowering demand for buying a house. Furthermore, high interest rates make it more viable to rent property rather than buy it. A person's ability to purchase a house is highly influenced by fluctuations in interest rates. This is because fall in interest rates reduced the cost of obtaining mortgage to buy a home and thus creates a higher demand for housing. On the other hand a rise in interest rates influences the cost of borrowing thus discouraging the potential buyers. As a result, the demand of housing will fall making the supply to decrease and vice versa (Igan *etal.*, 2011).

The banks' mortgage interest rate setting behaviour generally assumes that banks operate under oligopolistic market conditions (Lim, 2000). This means that a bank does not act as a price-taker but sets its loan rates taking into account the demand for loans and deposits. The interest rate on loans depends positively on the real GDP and inflation. Better economic conditions increase the chances of projects becoming profitable in terms of the expected net present value and therefore increase credit demand (Kashyap, Stein & Wilcox, 1993). An increase in permanent income has a positive influence on the loan demand while the effect due to the transitory part could also be associated with a self-financing effect that reduces the proportion of bank debt (Friedman and Kuttner, 1993).

An increase in the money market rate raises the opportunity cost of other forms of financing such as bonds making lending more attractive (Friedman and Kuttner, 1993). This mechanism also boosts loan demand and increases the interest rate on mortgage loans. The interest rate on deposits is negatively influenced by real GDP and inflation. A higher level of income increases the demand for deposits and reduces therefore the incentive for banks to set higher deposit rates (Hancock, 1991). In this case the shift of deposit demand should be higher if the transitory component of GDP is affected. On the contrary, an increase in the money market rate, ceteris paribus, makes more attractive to invest in risk-free securities that represent an alternative to detain deposits; the subsequent reduction in deposits demand determines an upward pressure on the interest rate on deposits.

Furthermore, other factors such as the costs of intermediation, riskiness of the credit portfolio and interest rate volatility have an impact on the interest rates on loans. The costs of intermediation have a positive effect on the interest rate on loans and a negative effect on that of deposits. Banks that invest in riskier projects have a higher rate of return in order to compensate for the higher percentage of bad loans that have to be written off. A high volatility in the money market rate should increase lending and deposit rates. Following the dealership model by Ho and Saunders (1981) and its extension by Angbazo (1997) the interest rate on loans should be more affected by interbank interest rate volatility with respect to that on deposits. This should reveal a positive correlation between interest rate volatility and the spread.

Finally, monetary policy changes influence mortgage interest rates. A monetary tightening determines a reduction of reservable deposits and an increase (reduction) of market interest rates (Kashyap et al, 1993). This has a direct and positive effect on bank interest rates through the traditional interest rate channel. Nevertheless, the increase in the cost of financing could have a different impact on banks depending on their specific characteristics. A monetary tightening has effect on bank loans because the drop in reservable deposits cannot be completely offset by issuing other forms of funding or liquidating some assets. Kishan and Opiela (2000) claimed that the market for bank debt is imperfect. Since non-reservable liabilities are not insured and there is an asymmetric information problem about the value of banks' assets, a "lemon's premium" is paid to investors.

The CBK operates under a monetary policy programming framework that includes monetary aggregates (liquidity and credit) targets that are consistent with a given level of inflation and economic growth (KIPPRA, 2006). The Central Bank of Kenya acts as the main regulator of commercial banks in Kenya (CBK Annual Report, 2009). Commercial banks play an important role in the pass-through of monetary interest rates. Moreover, banks may influence the external finance premium not only via the interest rates but also modifying the available maturity of loans or changing collateral requirements (Altunbas et al, 2009). Banking policies and guidelines on lending help in determining which retail or corporate clients the commercial banks approved for loans and which will be avoided, and must be based on the bank lending laws and regulations.

2.1.7 Mortgage Repayment Rates

The banks very frequently suffer from poor lending practice (Koford &Tschoegl, 1999). Monitoring, and other appropriate steps, are necessary to control or mitigate the risk of connected lending rates when it goes to companies or individuals (Basel, 1999).

The CBK issued guidelines which address the general principles that are prepared for governing the implementation of more detailed lending procedures and practices within the banks (Kinyua, 2001). It is mandatory for a bank to prepare Credit Policies Guidelines (CPG) for making investment and lending decisions and which reflect a bank tolerance for credit risk. Prior to consent to a credit facility, the bank should make an assessment of risk profile of its customers, such as of their business, and which can be done through the credit procedure. The loan allocation and the loan portfolio of any individual financial institution e.g. commercial banks will be dictated by lending decisions (Lim, 2000). The nature, size, and the structure of loan portfolio is a reflection of financial institutions lending decisions. The lending decisions should be guided by the following factors: The size of the lending institution: - This is very vital in determining the size of the loan to lend. Its loaning decisions will also depend on the business potential on the areas of its coverage. The small financial institutions should therefore consider their local community and immediate environment when drawing up the lending decisions. Multinationals will consider a wider environment (George & Simonson, 2000).

Economic conditions: - It refers to the economic activities around financial institutions operating environment. Many banks are usually located in areas where economic activities are either dominated by manufacturers or service industry, etc. Lending policies should therefore be tailored according to the pre-dominant business activity in the bank's environment (Lim, 2000). Of great importance here is to focus on the flow of business within this environment and design policies that are able to tap the benefits to the business. In periods of corporate bankruptcy, it is also important to notice that certain loan policies are important to help re-organize bankrupt institutions and transform them into highly profitable organizations (Dyer, 1997).

Credit Analysis-The purpose of credit analysis is to assess the likelihood that a borrower will default on a given loan (Hutter, 2005). Credit analysis consists of evaluating a borrower's needs and financial conditions which includes: Character or the person's traits such as honesty, ethical considerations, integrity, etc. This is usually based on the borrower's past behaviour in both banking & repayments of loans borrowed earlier. Capacity of the borrower which focuses on whether the borrower has the ability to generate sufficient funds to liquidate the loan and still stay financially healthy. This will include assessing the manager's ability, policy documents of the firm, investment policies, strategic plans, credit statements, etc. as well as judge the market potential of the institution. The judgment should be both on liquidity as well as solvency of the institution (Muller et al, 2007).

Collateral is the ability of the borrower to pledge specific assets to secure a loan (CBK, 2005). According to the provisions of Central Bank, all loans offered by banks must be secured to protect the borrower's funds. The value of the security should be ascertained and title documents charged to the loan which should not exceed 2/3 of the value of the securities. Capital or the money personally invested into the business by the borrowers and is an indication of how much the borrower has at risk should the business fail. Interested lenders and investors will expect the borrowers to have contributed from their own assets and to have undertaken personal financial risk to establish the business before advancing any credit (George & Simonson, 2000).

2.1.8 Residential Property Return on Investment

Residential property ROI is an indicator of how profitable a property in relations to its total assets and cash inflows. It is measured by means of asset returns. In general property return in the last two years has been recovering through interest rate. Nevertheless, this does not denote that all investors in the commercial industry are profitable since there are those that are pronounced in losses. This does not leave out interest rate on other Microfinance organizations (Oloo, 2009).

Reily (2006) observes that property ROI fluctuates sharply over the business cycle. Investment income plays a crucial in long term growth. Investment income is determined by return on investments; changes in the desired capital stock. Desired capital stock is the amount of capital that allows firms to earn the largest expected profit which depends on benefits and cost of additional capital. The associate capital is real cost of using a unit of capital per year. This is called the user cost of capital (uc), which equals the sum of the real interest cost (r) and depreciation (d) and price of capital (p).

To measure the profitability of property investment is simply taking variety of ratios used of which is Return on investment and gross income from the investment. Investment measures are articulated in terms of monetary units. The method is extensively used for investment investigative purposes include; ratio analysis. Ratio analysis gives a purpose of depiction of a company's investment performance because ratios do away with the dimension of outcome (Chandra, 2005). In this study, property income is measured in terms of the investment and return on investment.

2.2 Empirical Literature Review

2.2.1 Association between Mortgage Borrowing Rates and Residential Property Returns

A study by Moench, Vickery & Aragon (2011) conducted in the USA whereby the recent trends in housing were analyzed in terms of households' mortgage decisions focusing particularly on the choice between fixed rate mortgages and adjustable-rate mortgages. Using a simple model, they present evidence that this decline in the ARM (Adjustable Rate Mortgage) share can largely be accounted for by factors that explain

mortgage choice in earlier periods measures of the relative borrowing costs for a fixed-rate and adjustable-rate mortgages.

Gregory et al (2017) carried out research on the relationship between interest rates and housing incomes in America and other countries in the world, and concluded that interest rates are likely to be a key determinant of house incomes; house incomes representing the expected present value of future rents.

Wong, Hui, and Seabrook (2003) did a research which revealed that housing incomes displayed a moderately high correlation with interest rates in the deflationally period1998-2000. Results however showed that interest rates do not have a causal effect on housing incomes.

Li and Chiang (2012) in their research adopted a co-integration approach, vector error correlation and Granger Causality to analyze data on China's residential property income escalation from 1998-2009. The research revealed that co-integration analysis displayed a long-term equilibrium between residential property income and Consumer Price Indices (CIP) of GDP.

Another study by Wong *et al.* (2003) in Hong Kong during inflationary periods on the relationship between interest rates and house prices demonstrated that interest rates boost a very strong control on prices of housing hence determine the supply.

A study done in Sweden by Warsame *et al.* (2010) on the impact of interest subsidy on supply of single and multifamily houses. The study showed that subsidy has no effect in house construction in areas with high demand though the effected was reflected in areas with low demand of houses which the interest rates contributed a lot especially with multifamily houses. In New Zealand, Grimes and Aitken, 2010) studied the interrelationship between supply of housing and house price where data was from 73 administrative regions. It was concluded that high housing supply elasticity help in containing price changes caused by housing demand shocks.

Njongoro (2013) investigated the effect of interest rates on mortgage financing and found that the effect of flexible interest rates and the outcome show a negative

relationship between flexible interest rates and mortgage financing. He argued that if banks charge a fixed rate of interest, it would be possible for investors to plan for a predictable amount of money to be repaid hence stability and increased level of borrowing.

A study by Kibirige (2006) in Uganda on the determinants of mortgage rates revealed that interest rates range between 16-23% depending on the intention of the mortgage. The owner of the mortgage usually takes the lower rate and it increases as one tends towards commercial mortgages. These rates are normally high and this can be attributed to the lack of long term local funding.

Hassanein and Barkouky (2008) conducted a comparable study in Egypt on mortgage lending revealed that the mortgage rate equals to 14% with a margin of 4% over the main lending rate, leaving mortgage companies with only 1.5% which will be further decreased when attempting to securitize the mortgage loan and provide other guarantees.

Ngetich and Wanjau (2011) conducted a study on the effects of interest rate spread on the level of non- performing assets. The study focused on commercial banks in Kenya. This was a case study with an aim of establishing how interest rates affect non-performing loans in commercial banks operating within East Africa. Both quantitative and qualitative data were used in the study. The findings from the study revealed that the spread of interest rates affects the non-performing assets in commercial banks by increasing the cost of loans charged on the borrowers. When the cost of loans is high, there are high chances of loan default and likelihood of having a huge non-performing loan portfolio.

Kipngetich (2011) used regression model to investigate the relationship between interest rates and financial performance and found that there was a positive relationship between the two variables though the effect of interest rates on profitability was not significant in the all the financial institutions. In his view all the other factors which influence profitability needs to be enhanced to in order to improve the financial performance of financial institutions in Kenya.

Mwangi (2012) carried out a study on the effect of non-performing loans on the investment financial performance of commercial banks in Kenya. The study found how the effects of non-performing loan portfolio distress the success of commercial banks within Kenya. Secondary data were obtained from the banks relating to two variables: Return on Assets which was the dependent variable and non-performing loans which was the independent variable. The study adopted simple linear regression model to establish the effect of non-performing loans on the commercial banks. The found out that there are high amount of non-performing loans in low ROA. However, later years showed a different trend in cost of capital to invest was higher in the non-performing loans which are slow.

Previous studies (Moench, Vickery & Aragon, 2011; Kipngetich, 2011) have been done on the relationship between interest rates and investment performance are have yielded mixed findings as some of the theories are generalized rather than being specific. From the empirical studies done, the relationship of interest rates and property income show a positive and also negative relationship (Njongoro, 2013; Wong *et al.,* 2003; Gregory *et al.,* 2017). For instance the study conducted by Njongoro (2013) shows a negative connection between interest rates and supply of housing. Global studies have explored the relationship between interest rates and property return extensively and they are anchored in different contextual conditions hence the diversity of findings.

Locally empirical study in the relationship between interest rates and property return is not covered widely specifically relating to the fixed and variable type of interest rates.

2.2.2 Relationship between Mortgage Repayment Rates and Residential Property Returns

Godquin (2004) did a study on loan reimbursement performance of MFI borrowers within Bangladesh banks. Then his findings from the study disclose that mortgage with refinement periods which have considerably lower rate on loan criminal behavior than usual loans. His conclusion also hold up the argument that declining in the number of loan repayment customers stand to the possible to raise the competence in MFIs, as agreement loans are not related with high lend defaults. However, the study

did not explore loan repayment policies and investment performance relationship in the context of commercial banks.

Another study by Santiago and Francisco (2008) studied the effects of bank lending and financing constraints in SME Investment in the Federal Reserve Bank of Chicago. The study shows that investment is sensitive to bank loans for unconstrained firms but not for constrained firms. He also found out that unconstrained firms use bank loans to finance trade credit provided to other firms and predicts investment.

Tomaki (2013) conducted a study on the determinants of bank interest rate on borrowing behavior of commercial banks in Turkish for a sample of eighteen from 25 banks. The main objective of the study was to identify the determinants of bank interest rate behavior. The data was enclosed 2003 to 2012 periods. The variables used were size, access to long term funds, interest rates, GDP growth rate and inflation rate. The finding reveals that bank size, access to long term loan and inflation rate have significant positive impact on the bank`s lending behavior but, interest rates is of no consequence.

Fishman and Love (2004) studied the effects of banks loan on investment assessment. The study used a new method to evaluate the investment in terms of loan given. It shows that it is easier to lend to encourage more business to borrow and repay the amount borrowed. Whether these firms can link their investment to either bank loans or trade credit but they did not discuss the effects of interest rate on investment.

Wool Cock (2002) in his study Micro enterprises and social capital the study observed that if the loan term is too short, the borrower fails to generate revenue to enable him/her make repayments while a longer loan term may make the client extravagant and the client may in the end fail to pay back.

Hopenhayn (2002) examined the bank loans and investment variables. The study was interesting determinant of loans for financing their customers. The findings from the study show that desired amount of loans exceeds the supplied amount of loans at constrained firms, loans will predict the level of investment at constrained firms but he did not address interest rates on investment.

ZAMTIE (2003) studied the effects of interest levels in relation to factors affecting investments. Consistently high margins demanded by Commercial banks between their based rates and the actual cost of servicing bank loan and overdrafts. The study found out that current regimes of interest rates prevailing Kenya economy have been heavily induced by high government borrowing on domestic debt. Due to high government borrowing, commercial holdings in bonds which have been increasing steadily while the level of lending to private sector has been declining. He argue that the main part of concern is where the government is in use of borrowed funds which are intended to the financing of consumptive expenditure and maintenance of large organization.

Bhattacharya (2011) studied the influence of interest cycles on domestic rates. The study objective was to integrate domestic financial sector with external sector. He established that there is slacking of restrictions in the cross movement of capital across business entrepreneurs. The economy would affect domestic financial market with a significant lag. According to market conditions of demand and supply of credit thereby enabling the economy to withstand and control the inflexible interest rate policy is prone to macroeconomic instability.

Frank Keane (2013) studied the effects of securities loans collateralized by cash in reinvestment risk. He found out that securities loan collateralized by cash are by far the most popular form of securities lending transaction. The study tried to argue that the standard compensation scheme for securities lending agents which typically provides for agents to share in gains but not losses, creates incentives for them to take excessive risk. It also highlights the need for greater scrutiny and understanding of cash reinvestment by practices especially in the light of investor's experience. He did not conclude any information about cash lending policies and investment performance in his study. In his conclusion, argues that risk seeking incentives in agent compensation arrangements are the of cash market reinvestment activities are an uneasy combination that did contribute to transactions in sourcing specific securities for guaranteed market transactions. While it might tempting to suggest eliminating lending of securities against cash collateral such a policy response may be too extreme. An increase in data transparency in particular around cash reinvestment

choices seems likely to lower the possibility of reasonable cost to bear if it mitigates financial systemic disruption.

Andrian (2011) studied the effects of Securities and Repo Lending in federal bank of New York. He used the descriptive analyzed and concluded that market participants should consider both the social benefit of increased transparency and the need to refine standard agent compensation arrangements to limit the risk seeking incentives of agent in the securities for cash, the industry carefully tracks investment income as a performance metric suggest that is not typical form of securities loan transactions. He found out that cash providers should carefully monitor the lending transaction as a credit extension when the intrinsic value of the collateral is not driving the transaction. A counterparty that extends large amount of cash will want a good understanding of reinvestment activity it supports. Admittedly such diligence might prove difficult or impossible in practice as cash if fungible and cash borrowers or security lenders may have incentives to disclose credible but inaccurate description of asset to invest.

Vermeulen (2006) studied the response of firm's investments and financing to adverse cash shocks. The objective of the study was the role of bank relationships in the European Centrel bank. His main purpose was to find out the effects of financial constraints, lending relationship, firm investment and firm financing. He found that in his economic theory suggested that lending relationships are useful in overcoming asymmetric information problems between creditors and their clients. Consequently, firms with deep lending relationships benefit from better credit conditions. He argue that it is especially in terms of adverse cash flow that financial constraints are more likely to be binding and that firms more strongly need external finance, they have to reduce spending, including investment spending. Single and multiple bank relationship firms show that the same investment reaction to cash flow in periods of adverse cash flow shocks. Single bank relationship is not especially helpful in alleviating financial constraints problems during bad times. Finally he investigated the determinants of the probability of obtaining extra bank debt. It found that a single bank have a lower probability of obtaining bank credit in adverse cash flow shock periods is higher the larger the firm and the lower initial leverages. From the findings it was concluded that really impedes investment in adverse cash flow periods is when

firms cumulate a drop in cash flow and a contraction of external bank credit. It depends more on the size and the initial leverage of the firm than on the number of bank relationships.

Empirical evidence on mortgage repayment rates emphasize on lending constraints (Godquin, 2004; Santiago and Francisco, 2005). Other studies (Tomaki, 2013; Fishman and Love, 2004) identify loan repayment policies as one of the credit management policies adopted by financial institutions. On the contrary, other (Bhattacharya, 2011) focus on interest rate spread among financial institutions. Studies do not indicate how mortgage repayment rates relate to property return, a gap that the current study will bridge.

CHAPTER THREE
RESEARCH METHODOLOGY

This chapter covers the theoretical and philosophical assumptions upon which the research is based. These includes research design, target population, study area, sample size, data collection methods, data collection instruments, Validity and reliability of the research instrument as well as the techniques that will be used to analyze data and presentation.

3.1 Research Design

A research design is a program to guide the researcher in collecting, analyzing and interpreting observed facts, Orotho (2003). Study adopted correlation research design. Kothari (2004), states that correlation analysis studies the joint variation of two or more variables for determining the amount of correlation between two or more variables. In general, a correlational study is a quantitative method of research in which the similarities between two or more quantitative variables from the same group of subjects are determined.

3.2 Study Area

The study was conducted in Kisumu City. It’s a port city in western Kenya, the third largest city in Kenya, the principal city of western Kenya, the headquarters of Kisumu County. It is the largest city in western Kenya and is the second most important city after Kampala in the greater Lake Victoria basin but according to the United Nations it is now recognized as a key city and for that reason was award the title of 'Millennium City' - the first of its kind in the world.

3.3 Target Population

Population of the study refers to a group of elements or persons of similar characteristics and of interest to the researcher, Mugenda and Mugenda (2008). The population of the study entailed residential property industry under the Kenya Property Developers Association (KPDA), whose presence is felt in Kisumu City. The Real Estate developers registered by KPDA are 95 in number as at 31st March 2019.

3.4 Sample and Sampling Design

The sampling design represents the sampling unit, sampling procedure and the sample size for the study. The study sample comprised of residential property industry for the period 2013-2018, all of which monthly data was used in this study yielding 72 data points.

3.5 Data Collection

The study used purely secondary data. Secondary data refers to already documented information in either publication, books, journals or previously conducted studies. The preference of secondary data is that, it is convenient, readily available, and time saving, the reason for its use in this study.

3.6 Data Analysis and Presentation

Both descriptive and inferential statistics was used to summarize and analyze the data, involving measures of dispersion and central tendency where means and averages and regression analysis was used. Pearson r correlation and multiple regression analyses were also be used to address objective (i) and (ii). Data was presented using tables, figures and charts.

3.6.1 Correlation Analysis Model

The following formula adapted from Cohen et al. (2003) (Equation 3.1) will be used to calculate Pearson r

$$Correlation\ (r) = [N\Sigma XY - (\Sigma X)(\Sigma Y)]/\sqrt{([N\Sigma X^2 - (\Sigma X)^2][N\Sigma Y^2 - (\Sigma Y)^2])} \quad \textbf{(3.1)}$$

Where:

r	=	Pearson r correlation coefficient
N	=	number of values in each data set
$\sum xy$	=	sum of the products of paired scores
$\sum x$	=	sum of x scores
$\sum y$	=	sum of y scores
$\sum x^2$	=	sum of squared x scores
$\sum y^2$	=	sum of squared y scores

3.6.2 Multiple Regression Model

Multiple regression analysis is adopted to determine relationship between mortgage interest rates and; dependent variable, property income of real estate firms. The model for the regression analysis is below;

$$Y_i = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \varepsilon_i \qquad \textbf{3.2}$$

Y	=	Dependent Variable (real property return).
X_{1i}	=	theoretically defined Independent Variable (mortgage borrowing interest rates).
X_{2i}	=	theoretically defined Independent Variable (mortgage repayment rates).
β_0	=	Y intercept in the equation.
β_1 ,β_2	=	are the coefficients
ε	=	Residual in the equation.
i	=	Number of firms under consideration.
t	=	months under consideration (1-72).

CHAPTER FOUR
RESULTS AND DISCUSSIONS

The chapter presents the results and discussions for each objective. The first section presents results on the study variables. Subsequently, both bi-variate panel correlation and multiple regression analyses are presented with respect to each objective. A step by step analysis is done by first showing the descriptive statistics of the data used in the estimation. Thereafter both bivariate and multivariate results and discussions are presented with respect to each objective.

Table 4.1: Descriptive Statistics on the study Variables

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Mortgage borrowing rate	72	0.098	.15	.0530	.03107	.633	.322	.795	.634
Mortgage repayment rate	72	.00	.46	.1174	.10842	1.144	.322	1.009	.634
Return on Investment	72	.01	.19	.1494	.19643	2.244	.322	5.085	.634
Valid N (listwise)	72								

Source: Research data, 2019

Table 4.1 displays the descriptive statistics for variables of the study. Mean mortgage borrowing rate is 5.30 % with the highest and lowest mortgage borrowing rates of 15.0 % and 9.8 % respectively. This implies that on average, residential property developers in Kisumu City obtain mortgage loans at a rate of 5.3 %.

The mean mortgage repayment rate is 11.74 % with the highest and lowest mortgage repayment rates of 46 % and 0.000 respectively. This implies that out of the mortgage loans obtained by residential property industry players, some end up being non-performing loans.

On the other hand, the mean return on investment is 14.94 % with the highest and lowest ROI's of 19 % and 1 % respectively. This indicates that on average residential

property investments more or less the rate as the required rate of return for the same securities.

4.1 Association between Mortgage Borrowing Rates and Return on Investment of residential property industry

In order to assess the relationship between mortgage borrowing rates and ROI, Pearson's correlation and multiple regression analyses were performed.

Table 4.2: Correlations of Mortgage Borrowing Rates and Industry's ROI

		Mortgage Borrowing Rate	Return on Investment (ROI)
Mortgage borrowing rate	Pearson Correlation	1	-0.3047*
	Sig. (2-tailed)		(0.029)
	N	72	72
Return on Investment (ROI)	Pearson Correlation	0.3047*	1
	Sig. (2-tailed)	(0.029)	
	N	72	72

N = 72, p-values in parentheses * significant at 5 %.

Table 4.2 indicates the association between mortgage borrowing rates and return on investment, r = -0.3047 (p = .029) is weak though significant at 5 % significance level.

This implies increased mortgage borrowing rate leads to reduced return on investment.

Table 4.3: Multiple Regression Estimation Results on the relationship between Mortgage Interest Rates and Return on Investment

	Return on Investment Model			
Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	0.0602	*0.0385*	1.5639	0.1194
Mortgage Borrowing rate	-0.0438	*0.0206*	-2.1226	0.0350*
Mortgage repayment rate	-0.5144	*0.2038*	-2.5242	0.0124*
Adjusted R^2	0.8852			
Durbin Watson Stat	2.000			

Source: Field data, 2019, * significant at 5 %.

Table 4.3 results indicate that mortgage borrowing rate is a significant negative predictor of return on investment (ROI), $\beta = -.0438$ ($p = .0350$). This value is statistically significant since the p-value is less than 0.05. It can be inferred from the value that a unit change in mortgage borrowing rate leads to a decrease in return on investment of residential property industry of 0.0438, all things being fixed. These results concur with the previous studies (Moench *et al*, 2011 and Njongoro, 2013) who report negative association between mortgage interest borrowing rate and residential property performance. Also, these findings are at variance with those of Gregory *et al.*, 2017, and Warsame et al., 2010 who report both positive and no relationship between mortgage interest rates and performance of real estate investments.

4.2 Relationship between mortgage repayment rates and return on investment of residential property Industry

To assess the relationship between mortgage repayment rate and ROI, Pearson's correlation and multiple regression analyses were performed**.**

Table 4.4: Correlations between Mortgage Repayment Rates and ROI

		Mortgage repayment rate	ROI
Mortgage repayment rate	Pearson Correlation	1	-0.1583* (0.019)
	Sig. (2-tailed)		
	N	72	72
Return on Investment (ROI)	Pearson Correlation	-0.1583* (0.019)	1
	N	72	72

N = 72, p-values in parentheses * significant at 5 %.

Source: Field data, 2019

Table 4.4 indicates the relationship between mortgage repayment rates and return on investment, r = -0.1583 (p = .019) is weak though significant at 5 % significance level. Table 4.3 results indicate that mortgage repayment rate is a significant negative predictor of return on investment (ROI), β = - 0.0057 (p = .0353). This value is statistically significant since the p-value is less than 0.05. These findings are in tandem with Santiago and Francisco, 2008 and Tomaki, 2013 who report negative significant relationship between mortgage repayment rates and financial performance. However, the findings contradict those of Bhattacharya, 2011 and Andrian, 2011 document both positive and inconclusive relationships between mortgage repayment rates and firm performance.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary, conclusions and recommendations of the study. It also presents the limitations and delimitations of the study. Finally, it suggests areas for further studies.

5.1 Summary of Findings

Multivariate analysis using multiple regression shows that mortgage borrowing rate is a significant negative predictor of ROI whereas mortgage repayment rate is a significant negative predictor of ROI.

5.2 Conclusions of the Study

Two conclusions can be drawn based on the preceding evidence. The first conclusion based on the first objective is that mortgage borrowing rate is an important negative predictor of ROI. Based on second objective it is concluded that mortgage repayment rate is a pertinent negative predictor of ROI.

5.3 Recommendations of the Study

The following recommendations can be made based on this research. Based on the first conclusion, it is recommended that managers of residential properties in Kisumu City should reduce negotiate for reduced mortgage borrowing interest rate as this undermines ROI.

On the second conclusion, it is recommended that it is recommended that managers of residential property investments should reduce mortgage repayment rate as this undermines ROI of these investments.

5.4 Limitations of the Study

While this research makes significant contributions to the body of knowledge on mortgage interest rates and return on investment of residential property industry, it is necessary to evaluate the results in the context of the study's methodological limitations. A number of limitations are identified in the conduct of this research.

First, only residential industry is included in the study and the mortgage interest rates and ROI reported by this industry is a limitation of the study. Restricting the study to

residential property excludes a significant and most efficient institutional arrangement for undertaking productive activities thereby compromising its global generalizability. Since the study covered only residential property industry, it left out other real estate investments so the results of the study cannot be generalized for all real estate investments in the Kenyan economy.

Lastly, the study covered only six years' period spanning from 2013 to 2018, the analysis period is short and may be analysis over a longer period may yield more robust results.

5.5 Suggestions for Further Research

The following suggestions are made for further studies.

First, studies should be designed with a view to replicating the results of this research within the wider setting of Kenya. How predictor variables are likely to play out with the dependent variable in both bivariate and multivariate analysis will be informative to both industry players and policy makers in designing the mix between mortgage interest rates and investment return.

Second, it is also suggested to other scholars to conduct similar studies using different designs from panel designs such as pure time series or even pure cross sectional surveys.

Third, academicians should conduct industry/or sector specific studies to investigate the unique issues in various sectors and compare results across panel groups.

Fourth, future researchers should consider other contexts and combine both secondary and primary data to check the interrelationships between the study variables.

REFERENCES

Adrian T, Begalle B, Copeland A, Martin A (2011) Security of Repo Lending Federal Bank. New York.

AIB Capital, (2016), *Kenya's banking sector report.* Retrieved on April, 2017, from http://www.aibcapital.com

Amadeo, K. (2012). What Are Interest Rates and How Do They Work? *U.S. Economy Journal*.

Ann Muthaura (2010); The Relationship between Interest Rates and Real Estate Investment in Kenya

Aoki (2004) Financial risk assessments on domestic saving and economics, Ethiopia.

Bain (2007) The chance of borrowers on financial risk, UK.

Bank Survey Think Business, (2015). *Full Circle the changing face of Kenya's Banking Sector*, A think Business Publication

Barkouky, H. &. (2008). The Egyptian Mortgage practice. *International Journal of Managing Projects in Business, Vol 1*(2).

Barksenius, A., & Rundell, E. (2012). *House Prices for Real-The Determinants of Swedish Nominal Real.* Gothenburg.

Barrack, O. (2014). *Stima Sacco's Real Estate Project.* Retrieved March 25, 2016, from Building Ke: http://building.co.ke/stima-sacco-real-estate-project

Benveniste, L., Capozza, D. R., & Seguin, P. J. (2001). The value of liquidity. *Real Estate Economics*(29), 633-660.

Bernanke, B., Gertler, M, & Gilchrist S. (1999): *"The Financial Accelerator in a Quantitative Business Cycle Framewor*k," in Handbook of Macroeconomics, Volume 1, ed. by J. B. Taylor and M. Woodford, pp. 1341-1393, Amsterdam. Elsevier.

Bhattacharya (2011) A study of modeling interest rate cycles institute of economic growth. Delhi India.

Blanchard (2001) Short Run on Auto Regression Institute Auditors, Unites States.

Boggessa, L. N., Greenbaumb, R. T., & Titac, G. E. (2013). The Impact of Crime on Property Values. *Journal of crime and Justice, 36*(3).

Brueggeman, W., & Fisher, J. (2008). *Real Estate Finance & Investments* (11 ed.). New York: McGraw- Hill

CAFH. (2012). Year Book 2012. *Housing Finance in Africa-A review of some of Africans's Housing Finance Markets*. Finmark Trust.

CAHF. (2011). Year Book 2011. *Housing Finance in Africa-A review of some of Africa's Housing Finance Markets*. Finmark Trust.

Cartel (2004) Promotion of investments on liquidity case of Keyness. Wiston University, New York.

CBK Annual Report (2014) Kenya Gazzette and CBK Report 2013 Kenya.

Central Bank of Kenya -CBK. (2014). *Bank Supervision Annual Report*. Retrieved in April 17 from https://www.centralbank.go.ke/index.php/bank-supervision-reports.

Central Bank of Kenya -CBK. (2016). *Bank Supervision Annual Report*. Retrieved, April 17 from https://www.centralbank.go.ke/index.php/bank-supervision-reports.

Chandra P (2005) Investment Analysis and Portfolio Management. (2nd edn), Tata McGraw Hill, New York.

Cheruiyot, T. K., Kimeli, C. M., & Ogendo, S. M. (2012). Effect of Savings and Credit Co-operative Societies Strategies on Member's Savings Mobilization in Nairobi, Kenya. *International Journal of Business and Commerce, 1*(11).

Cooper, D., & Schindler, S. (2008). *Business Research Methods.* New York: McGraw Hill.

Feldman, B. (2003). Investment policy for Scrutinized and direct Real Estate. *Journal of Portfolio Management, Special Real Estate Issue*, 112-121.

Financial Web (2012).The Cost of Borrowing Money. *The Independent financial portal, Financial web*

Finscope. (2012). Retrieved from www.finscope.co.za FSD Kenya, & Central Bank of Kenya. (2009). *FinAccess National Survey 2009: Dynamics of Kenya's changing financial landscape.* Retrieved May 26, 2016, from FSD Kenya: http://fsdkenya.org/publication/finaccess-national-survey-2009-dynamics-of-kenyas-changing-financial-landscape

Fisher, Love (2004) Bank loom on investment. Wiston University, United Kingdom. Wool Cock (2002) Microenterprise on social capital UK.

Frank Kean (2013) Loan securities on reinvestment, Kenya. University of Nairobi Publishers.

Gardeklint, A. (2009). *Facts about the Co-operative Movement.* Nairobi, Kenya.

Gertler (2010) Financial shock on economics in Tessie University on Ethiopia.

Glaeser, E., Gottlieb, J., Gyourko,J.(2010).*Can interest rates explain the US housing Boom and bust?* Research-based policy analysis and commentary from leading economists.

Godquin M (2004) Microfinance repayment performance in Bangladesh: how to improve the allocation of loans by MFIs. World Development 32: 1909-1926.

Gregory D. Sutton et la (2017); Interest Rates and House Prices in the United States and Around the World: Bank for International Settlements; BIS Working Papers, No.665

Grimmes, A., & Aitken, A. (2010). Housing supply, Land and Cost and Price Adjustment. *Real Estate Economics, 38*, 325-353

Herbling, D. (2016, August 19). *Housing boom lifts Kenya to league of mid income nations.* Retrieved from Business Daily: http://www.businessdailyafrica.com/Housing-boom-lifts-Kenya-to-league-of-mid-income-nations/539552-2469450-lr3d4sz/index.html

Hopenhayn (2006) Non performing loan on investment in small business management, Zambia.

Hurt, S. (2010). *Affordable Housing Defined.* Retrieved May 29, 2016, from Sacramento Press: http://sacramentopress.com/2010/05/03/affordable

Igan, D., Kabundi, A., & Tamirisa, N. (2011). Housing, credit and real activity cycles: Characteristics and co-movement. *Journal of Housing Economics, 20*(3), 210-231.

Kariuki, C. (2013). *Expensice mortgages acr as clamp on home ownership growth.* Retrieved June 1, 2016, from The Mortgage Company: www.tmcafrica.com

Kenya National Bureau of Statistics (2018); Trends in Population Growth in Kenya.

Kenya National Bureau of Statistics. (2016). *Kenya GDP Growth Rate.* Retrieved from Trading Economics: http://www.tradingeconomics.com/kenya/gdp-growth

Kibirige, M. (2006). Mortgage Financing, How it works in Uganda. *Journal of capital markets industry, 10*(2).

Kipngetich KM (2011) Relationship between Interest rate and Return on Equity. Unpublished MBA project University of Nairobi Kenya.

Kothari, C. (2004). *Research Methodology: Methods and Techniques* (2nd ed.). New Delhi: New Age International Publishers.

Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*, (Second Edition), New Age International Publishers.

Lacoviello (2005) Theory of accounting and finance on lenders. Wiston University of UK.

Lispon (2012) The value of interest rate on investment New York.

Makori J and Memba F (2015); Factors influencing performance of mortgage financing among commercial banks in Kisii town, Kenya. International Journal of Economics, Commerce and Management.

McCord, M., McGreal, S., Berry, J., & Davis , P. (2011). *The Implications of Mortgage Finance on Housing Market Affordability.* Emerald Group Publishing Limited.

Mugenda OM, Mugenda AG (2003) Research methods: Quantitative and qualitative approaches. African Centre for Technology Studies Nairobi.

Mugenda, O., & Mugenda, A. G. (2003). *Research Methods.* Nairobi: Act Press.

Muriuki, N. M. (2013). *The Effect Of Interest Rates Volatility On The Growth Of Real Estate Market In Kenya.* Nairobi, Kenya: University of Nairobi.

Muthaura, A. (2012). *The relationship between interest rates and real estate investment in Kenya.* Nairobi.

Mwangi (2012) Non performing loans in Kenya.

Ndung'u, N.(2010). Growing real estate through finance. Kenya: *Forum at the Kenya School of monetary studies.*

Ngetich, Wanjau (2011) Effects of interest rate on banking, Kenya.

Ngochoch, V. B. (2013). *The relationship between the cost of finance and demand for housing units in Nairobi County.* Nairobi.

Ngugi, B. (2016). *Banks where Kenyans can get cheap credit.* Retrieved May 15, 2016, from The Daily Nation: http://www.nation.co.ke/business/CBK-publishes-bank-lending-rates/-/996/3074188/-/15ryfggz/-/index.html

Njogoro, J. (2013). *The effect of mortgage interest rates and growth of financing in Kenya.* University of Nairobi.

Nwangbo V, Onkonkwo (2014) Survey on market garden feature in Abi State University Nigeria.

Nzalu, F. (2013). *An Assessment of the Factors Affecting the Growth in Real Estate Investment in Kenya.* University of Nairobi.

Obondy, S. (2013). *The effect of interest rates on the supply of real estate finance in Nairobi County.* Retrieved May 23, 2016, from University of Nairobi Digital Repository: http://erepository.uonbi.ac.ke/handle/11295/59527

Obongo, A. (2015). *Expected rise in interest rates to hit mortgages.* Retrieved May 16, 2016, from The Daily Nation: wwww.dailynation.com

Ochieng, C. (2007). A Critical Review of Housing Delivery in Nairobi. *Different actors- different socio-economic groups, 1*(3), 140-152.

Okeyo, V. (2013). *Prime Home Prices Stay Strong.* Retrieved July 20, 2016, from The Daily Nation:http://www.nation.co.ke/lifestyle/DN2/Real-estate-prices-remain-static/-/957860/2814362/-/wg7gogz/-/index.html

Oloo O (2009) The Banking Survey. Hink Business. Nairobi.

Omengo, S. (2011). High Interest Rates Hurting Real estate Investment. *Kenya Realtor*, 38-40.

Omengo, S. (2012).*High Interest Rates Hurt Real Estate Investment:* Kenya*:* Realtor.

Otwoma Fredrick Bwire (2012); The Effect of Interest rates on Property Prices in Kenyan Real Estate Market

Oundo, W. O. (2011). *The Impact of Commercial Urban Forms on the Performance of the Commercial Real Estate Markets: A Case Study of Nairobi City.* Unpublished PhD Thesis, University of Nairobi.

Pitman, C. (2008). *Use of Social Capital in Borrower Decision-making" Cambridge, MA: Joint Center For Housing Studies.* Retrieved June 1, 2016, from The Harvard University: http://scholar.harvard.edu/cassipittman/publications/%E2%80%9Cuse-social-capital-borrower-decision%E2%80%90making%E2%80%9D-cambridge-ma-joint-center-ho

Reily (2006) The study of long term loans on investment securities in Uganda.

Robert (2007) The purpose of interest rates on investment, India.

Sanders A. B (1997); The historical behavior of REIT returns. Real Estate investment trust: structure, analysis, and strategy, 277

Santiago, Francisco (2008) Bank Lending, Financing constraints and SME Investment, University of Granada, Federal Reserve Bank of Chicago.

Saunders, M., Lewis, P. & Thornhill, A. (2009). *Research methods for business students*, 5th ed., Harlow, Pearson Education.

Senhadji (2002) Relationship between loan boom on asset price cycle, Arabia.

Shaw, E. S. (1973). *Financial Deepening in Economic Development*, New York: Oxford University Press.

Shelter Afrique. (2013). *Mavoko Sustainable Neighbourhood Programme.* Feasibility Report, April 2013.

Stiglitz, J. E., & A. Weiss, (1981). "*Credit Rationing in Markets with Imperfect Information*", American Economic Review, Vol. 71, No. 3.

Tessie (2009) Effects of nonpayment on cash lending, Ethiopia.

The Constitution of Kenya. (2010). *Kenya Gazette Supplement No. 55.* Retrieved July 19, 2016, from Kenya Law: http://kenyalaw.org/kenya_gazette

Thomas, L. C., Edelman, D. B., & Crook, L. N. (2002). *Credit Scoring and Its Applications*. Philadelphia: Society for Industrial and Applied Mathematics.

Tomaki (2013) Determinants of bank loan on financing small business.

Veginina D (2004) Analysis of the incentive mechanisms of individual and group micro lending contracts. Universität Frankfurt

Vermeulen P, Catherine Fuss (2006) The Response of Firms investment and financing to Adverse cash flow shocks, the role of bank relationships. Working Paper Series European Central Bank.

Warsame, A., Wilhemsson, M., & Borg, L. (2010). The effect of subsidy on housing construction on various regions of Sweden. *Journal of European Real Estate Research, 21*(2), 228-244.

Wong, Hui & Seabrook (2003); The role of interest rates in influencing housing prices: Pacific Property Research. Journal: Vol.9, No.3.

World Bank. (2010). World Bank Report. *Kenya's Informal Settlement*. Retrieved December 2010

World Bank. (2011). *Developing Kenya's Mortgage Market, Report N.63391-KE.* Washington D.C.

ZAMTIE (2003) Review of Factors Affecting Level of Interest Rates & Related Factors, Lusaka, Zambia.

APPENDICES

Appendix I: Data Collection Form

YEAR	MONTH	MORTGAGE BORROWING RATE	MORTGAGE REPAYMENT RATE	PROPERTY MONTHLY INCOME	PROPERTY CAPITAL INVESTMENT MONTHLY DEFLATED
2013	JANUARY				
	FEBRUARY				
	MARCH				
	APRIL				
	MAY				
	AUGUST				
	SEPTEMBER				
	OCTOBER				
	NOVEMBER				
	DECEMBER				
2014					

Appendix II: Study Area Map