EFFECT OF MORTGAGE FINANCING ON GROWTH OF THE REAL ESTATE SECTOR IN KENYA

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

To my family for their monetary and moral encouragement, May the Almighty God, reward them.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
CAHF	Centre for Affordable Housing Finance
ECM	Error Correction Model
FDI	Mortgage financing
GDP	Gross Domestic Product
KNBS	Kenya National Bureau of Statistics
NNE	New Neoclassical Economics
OLS	Ordinary Least Squares
SPSS	Statistical Package for Social Sciences
UNCTAD	United Nations Conference on Trade and Development
VAR	Vector Auto Regression
VIF	Variance Inflation Factors

ABSTRACT

Mortgage financing is a key component of financial system that contributes to the development and depth of financial markets, as well as having the ability to have a beneficial impact on a country's financial and economic progress. An effective mortgage market guarantees long-term returns since it entices investors. Moreover, borrowers have better access to funds when the market is efficient, and this aids in stimulating economic growth. However, most financial institutions attach myriad of conditions and covenants which impede mortgages access which negatively affects mortgage credit to GDP ratio. Using this study, we tried to determine the impact that mortgage finance has on the development of the Kenyan real estate industry. Mortgage finance, interest rates, the unemployment rate, and inflation were all considered independent factors in this study. The response variable that the researchers attempted to explain was the expansion of the real estate industry. The data was collected on a quarterly basis over a period of ten years (from January 2011 to December 2020). A descriptive research approach was employed in the study, with a multiple linear regression model used to examine the connection between the study variables. The data were analyzed using Statistical Packages version 24. The study's findings yielded an R-square value of 0.595, indicating that the chosen independent variables could explain 59.5 percent of the variance in the real estate sector's development in Kenya, while the remaining 40.5 percent was due to other factors not investigated in this study. The independent factors exhibited a significant relationship with real estate sector growth (R=0.771), according to the research. The F statistic was noteworthy at a 5% level with a p=0.000, according to the findings of the ANOVA. This suggests that the model was adequate for explaining real estate expansion. Furthermore, the findings revealed that the sole major predictor of real estate expansion was the unemployment rate. Despite the fact that mortgage financing has a beneficial impact on real estate expansion, the impact is not statistically significant. Interest rates and inflation had a negative, although statistically insignificant, impact on real estate sector growth. According to the research, steps are required to manage the current levels of unemployment since they have a major impact on real estate industry development.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Mortgage finance is a critical factor that determines the quality and tenure of housing uptake, usefulness of the financial system and stability and the general financial portfolio of the public. Increase in uptake of mortgage finance is an indication of a well-functioning mortgage market in the domiciled national economy, coupled with improved standards of living and contributes to growth of the real estate sector (Olawumi, Adewusi & Oyetunji, 2019). Mortgage financing is an important component of financial systems that helps expand and deepen financial markets and has the ability to boost a country's financial and economic growth (Amidu, Agboola & Musa, 2016). Mortgage financing affects growth through its influence on savings, employment, labor productivity and total investment (Ahiadorme, 2016).

On a theoretical perspective, the financial intermediation theory supports that mortgage finance and its institutions aid growth by facilitating the mobilization and distribution of excess money from savers to prospective homeowners. (Donkor-Hyiaman, 2018). The investment multiplier theory states that mortgage finance is an instrument for enhanced development and growth due to its interrelationship with other economic sectors and multiplier effects (Ofor & Alagba, 2019). The new neoclassical economics theory postulates that bank transactions like mortgage financing are the major influencers of growth such that with a high frequency of transactions taking place, there is a higher potential for growth (Akinwunmi, 2012).

Across the world, mortgage finance is the bedrock on which the housing finance systems in both developing and developed nations survive (Badev, Beck, Vado & Walley, 2014). However, in spite of its recognized social and economic value,

mortgage finance frequently remains under-developed in developing countries (Ahiadorme, 2016). Most developing countries face the challenge of access to mortgages, especially in Africa where majority of the population earn low wages due to inadequate home financing are restricting access by most families and widespread urban poverty (Nwuba & Chukwuma-Nwuba, 2018). Mortgage finance supply systems in most developed economies are considered operationally efficient in terms of intermediation. Most developers felt constrained in their access to credit (Olawumi, Adewusi & Oyetunji, 2019).

1.1.1 Mortgage Financing

Mortgage financing is a loan secured by real estate assets and repaid over time in a specified number of payments by the borrower (Doling, Vandenberg & Tolentino, 2013). Mortgage finance is money lent to a borrower against a security of a property owned by the borrower, given by a mortgage institution, usually to enable the lender procure the property with detailed payment schedule and interest (Anidiobu Okolie & Ugwuanyi, 2018). Mortgage financing normally seeks to extend mortgages to allow qualified business entities as well as individuals to secure funds that can be paid back in a timely manner and favorable terms that are within the recipient's ability to pay as well as generate revenue for the lender (Tesfaye, 2007).

Mortgages are vital to augment the buyers' purchasing power and accelerate the path to homeownership. Numerous nations have committed to financial innovations that create robust mortgage markets (Zhou, 2015). Mortgage finance thus benefits housing markets and the whole economy in a variety of ways, both directly and indirectly, by smoothing transactions and refining the environment in which transactions are conducted (Lea, Chiquier, & Hassler, 2004). A low-cost method of financing general

borrowing for consumption, business formation or non-housing investment is mortgage financing (Johnson, 2014). Creation of employment also results from mortgage finance and this can be classified into either direct employment, predominantly to the construction sector and indirectly to other related industries (Hanişoğlu & Azer, 2017).

As being a part of mortgage markets, financial markets and mortgage loans are vital tools of monetary policy. Mortgage markets are significant instruments of monetary policy such that healthier economies and governments make and review regulations regarding them (Hanişoğlu & Azer, 2017). Mortgage financing is an indispensable decision for both, lenders and borrowers. Not only this decision is quantitatively vital but also qualitatively significant (Zhou, 2015). Various indicators are also utilized for measuring mortgage market as well as mortgage financing growth. The most commonly used ones include the ratio of mortgage debt to GDP (mortgage depth), the number of mortgage accounts and total mortgage lending (Mogaka, Kiweu & Kamau, 2015). The present research used mortgage loan values as a proxy for mortgage finance.

1.1.2 Growth of the Real Estate Sector

Growth, per the Naceur and Goaied (2001), is a technique employed by businesses to increase revenue by selling goods or earning money by offering services. According to Lee (2009), growth is defined as an increase in profit obtained through reducing expenses. As a result, growth can be characterized as an increase in sales, a firm's growth through mergers or acquisitions, diversification, product and service development, an increase in profits and an increase in the number of employees. A rise in a firm's revenue and sales is referred to as growth in financial terminology.

According to Gudda (2003), business growth is defined as an increase in a significant indicator of a company's performance. This may be done through growing a company's main business or revenue via greater products sales or services income, or by improving the company's profitability through cost reduction.

Investors and consumers alike have a realistic expectation of continuous economic development as a result of growth. This encourages company investment and consumer spending, resulting in a rise in the demand for money moving through the economy (Mogaka, Kiweu & Kamau, 2015). Growth makes simpler the way in which the population and society at large accesses the redistribution of incomes. The slight differences and swelling effects of the up-surging rates, grow for periods of one decade or more (Boldeanu & Constantinescu, 2015). Production of goods and services increases with an increase in the rate of economic growth, production of goods and services rises and in turn, the number of job opportunities grows, unemployment rate reduce and the population’s living standard’s improves (Haller, 2012).

However, there is no one indicator of growth because of changes in financial declarations such as the financial statement and the declaration of full income, the degree of growth of a company may be determined as high or low. National per capita income is the most generally used measure of growth; a per capita gain in income indicates progress in economic well-being. Economic growth is also affected by physical resources since they accentuate conception of expansive capital as demonstrated by perpetual or rising return to scale (Lucas, 1993). In the economic sector, it is normal practice to assess growth by increasing earnings, increasing market shares, increasing company values, and generally making a contribution to GDP over a set financial time, amongst other things (typically one year) (UNCTAD, 2017). This

study measured growth using the composite growth index provided by Hass Consult Ltd.

1.1.3 Mortgage Financing and Growth

Asabere, McGowan and Lee (2016) examined the effect of mortgage financing on economic development with key emphasis on mortgage market size and GNI per capita. The results indicate mortgage market size had a negative correlation with economic growth. There was a substantial positive association between mortgage financing and economic expansion, according to the regression results. This discovery contradicts Okidim and Ellah's findings (2013) explored how mortgage financing and capitalization affected economic growth in Nigeria. The findings documented an insignificant positive relation between capitalization, mortgage financing and economic growth.

Udoka and Kpataene (2017) assessed the effects of mortgage lending on residential development in Nigeria. Data was collected for the period between 1990 and 2014 whereas analysis was carried out using the granger causality tests and the Error Correction (ECM) Model. This study also found a significant link between mortgage financing and housing growth. Further, Filotto, Giannotti, Mattarocci and Scimone (2018) examined how residential mortgages, real estate market affected Europe’s economic growth. The study found that housing price index and mortgage shocks had a positive effect on GDP on the short-term whereas the housing price index had a negative effect but the volume of mortgages had a positive effective on mortgage supply

The theoretical link between mortgage financing and growth has been advanced by a number of authors as well as in various theories. For instance, the financial

intermediation theory supports that better functioning financial intermediaries reduce information asymmetries and facilitate transactions hence exerting a causal effect on growth (Levine, Loayza & Beck, 2002). In addition, the financial intermediation theory postulates that there are extensive external benefits which are realized through a well-functioning mortgage market to the domiciled national economy for instance: - contribution to growth and enhanced standards of living (Vinogradov, 2006). Lea, Chiquier and Hassler (2004) postulate that developing mortgage capital markets can enhance financial market and economic stability.

1.1.4 Real Estate Sector in Kenya

Kenyan real estate sector is exponentially increasing with malls in different areas of the nation coming built. Increased urbanization and a rising middle class with improved procurement are driving development in the retail submarket. Because of the development in the services industry, the Office market has grown in Kenya (Okumu, 2017). The Nairobi Securities Exchange established the Real Estate Investment Trust (REIT) market in 2013 as a consequence of increasing immovable demand. There is a heavily regulated REIT market. This instrument of investment is very significant because it allows collective investment in properties where both kinds of investors: retail and corporate pools and invests in property projects. their collective funds (Muia, 2017). In particular, housing supplies in the lowest segment of people on the real estate market are severe under-supply. Real property prices are rising with a significant supply shortage in the mid and low income sectors of the domestic market.

Mortgage lending in Kenya is low. Lenders have not been willing to extend mortgage portfolios owing to low access to funding from capital markets and strict security

requirements. Affording housing is still a challenge in the country because of the expansive nature of housing units and financing. Governments and investors are continuously increasing access to financing for home buyers. This has been achieved through the formation of mortgage refinance companies and development of a number of affordable housing projects. Banks like Housing Finance and Bank of Africa have supplied residential housing with 100 percent financing (Centre for Affordable Housing Finance in Africa, 2020).

Because of the increase in urbanization, and limited urban planning, there has been a low supply of housing in Kenya compared to the demand and home ownership is expensive that many households cannot afford. A number of factors have contributed to this situation such as expansive financing, high urban land costs, insecurity of tenure, increased construction costs. Several changes in regulation have negatively impacted housing and housing finance in Kenya, seeking to extend production and supply of inexpensive housing, the regulatory frameworks, and integrated human settlement planning and development. The Housing and mortgage market in the country is however more likely to expand if it becomes more affordable. This will increase access to adequate shelter and increase the country’s economic development (CAHF, 2020).

1.2 Research Problem

Mortgage financing is an important component of financial systems that helps expand and deepen financial markets and has the ability to boost a country's financial and economic growth (Bah, Faye & Geh, 2018). An effective mortgage market guarantees long-term returns since it entices investors. Moreover, borrowers have better access to funds when the market is efficient, and this aids in stimulating economic growth

(Johnson, 2014). However, most financial institutions attach myriad of conditions and covenants which impede mortgages access which negatively affects mortgage credit to GDP ratio (Carballo & González, 2009). In addition, mortgage financing is prone to credit risk leading to high default rates which adversely affects financial intermediation and economic growth (Apergis & Rezitis, 2003).

Although the Kenyan real estate sector grew by 5.9% in 2018, well above the global and Sub-Saharan (3.6%) averages, persisting low levels of income and limited access to financial services, have lowered the proportion of adults that can afford credit – approximately 5 percent adults as at 2018. Housing finance in the country is still at a growing stage. Outstanding mortgage loans stood below 5 percent of GDP as at 2018 (World Bank, 2018). Policy makers are coming with strategies aimed at boosting mortgage financing which is expected to increase housing investments and in essence enhance growth of the real estate sector. There was therefore need to conduct an empirical study to investigate whether mortgage financing has an effect on growth of the real estate sector.

On the empirical side, there is a substantial quantity of research into the relationship between mortgage lending and global and local economic growth. For example, Carbó-Valverde and Rodriguez-Fernandez (2010) in Spain assessed how mortgage loans affected housing investments and documented that mortgage finance adversely affected housing investments and prices though the authors did not incorporate economic growth. However, in Nigeria, Nwamara and Aronu (2014) explored how economic development affected land mortgage financing and revealed that variations in land mortgage transaction and interest rates positively affected economic growth but the study focused on land financing. Further, Apergis (2006) assessed the effect

of macroeconomic factors on house price among European Mediterranean countries and documented that highest explanatory power on deviation of house prices were established in mortgage loan rate, trailed by employment and GDP growth rate respectively though the study was cross country in nature.

Within Kenya, Akenga et al., (2015) studied how mortgage market risk impacts mortgage uptake and revealed that interest rate, credit risk and liquidity risk significantly affected mortgage uptake but growth was not incorporated as a variable. In addition, Owuor, Githii and Mwangi (2018) and Mogaka, Kiweu and Kamau (2015) examined effect of macroeconomic factors on mortgage market growth with both studies concluding that inflation, GDP growth and interest rates affected Kenyan mortgage market growth though the studies failed to capture mortgage financing. From the above reviewed local and global studies, it evident most studies provide conflict findings with some oscillating from negative to positive and other indicating no relationship at all. The studies also were carried using different methodologies in varying contexts making it difficult to generalize the findings to a particular context. Furthermore, there has been no convincing examination of the connections between mortgage lending and real estate sector growth in Kenya, resulting in an empirical literature gap. This affected the research question: What impact does mortgage finance have on Kenya's real estate industry growth?

1.3 Research Objective

The study's purpose was to determine how mortgage finance affected Kenya's real estate market.

1.4 Value of the Study

The review will be of significance to the management of financial institutions as well as mortgage financing entities, policy-making entities and to the literature of finance. The management of mortgage financing institutions may use the conclusions and study recommendations to formulate effective mortgage financing strategies which will enhance housing investments as well as growth of the sector.

The research will also be of value to policymaking organizations like governments, the central banks and economic bodies that formulate the various polices on mortgage financing, investment in housing and economic growth policies. The policy making bodies may use the study recommendations to come with effective mortgage financing strategies to enhance housing investments and real estate sector growth.

Finally, the review will add on to the available theoretical discussion on the financial intermediation theory, investment multiplier theory and new neoclassical economics theory. In addition, the research will contribute to the empirical literature on mortgage financing, housing investments, and real estate sector growth. Additional, studies may also be carried out based on the recommendation and suggestions for future studies.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter describes the theories that underpin this research and provides instances of how they've been used. This chapter gives a summary of recent empirical study on this topic as well as other related topics. The research will also include a review of the drivers of growth, as well as a framework that illustrates the connection between the many factors examined.

2.2 Theoretical Framework

This sections pertains an examination of the theories that have been proposed to account for the occurrences under investigation. Financial intermediation theory, investment multiplier theory, and new neoclassical economics theory are among the theoretical reviews discussed.

2.2.1 Financial Intermediation Theory

This theory emanated from Gurley and Shaw (1960) and was developed out of the informational asymmetry and transaction cost theories (Andrieş, 2009). According to the theory, financial intermediaries are structured in a manner to apply corporate control, mobilizing savings, diminish the costs of looking for attractive investments and the management of risk (Johnson, 2014). In addition, financial intermediaries allocate decisions and influence savings in manner that may change long term growth rates and it recommends that by availing such services in the economy (Levine, Loayza & Beck, 2002). According to the hypothesis, mortgage finance helps to widen and deepen the financial sector, improve financial access, and encourage financial inclusion8 (Bah, Faye & Geh, 2018).

Financial markets and financial intermediaries, according to the theory, are two crucial institutions that help an economy allocate resources optimally (Vinogradov, 2006). Financial intermediaries, according to the notion, exist to route financial resources between deficit and surplus agents (Johnson, 2014). The assumption is that intermediaries lower transaction costs and bridge knowledge gaps. Nevertheless, critiques argue that intermediation is useless as advances in information technology gain traction, deepening and deregulation of financial markets tend to lower information asymmetry plus transaction costs (Scholtens & Van Wensveen, 2003).

The theory argues that allocation of capital, mobilizing savings, management of risk, monitoring firms and ease of transactions is effectively accomplished by financial intermediaries like commercial and other financial entities, for example. In the process of advancing credit, financial intermediaries are associated with employment of resources and contribute to economic growth and development (Akinwunmi, 2012). Mortgage financing makes it possible to purchase more than just housing. A security in form of a house allows for is used as surety for loans (Johnson, 2014). In this study, the financial intermediation theory supports that an efficient mortgage market enhances the development of growth and housing financing by accelerating the development of financial entities that move money between deficits and mortgage surplus agents.

2.2.2 The Investment Multiplier Theory

The investment multiplier theory was conceptualized by Kahn (1930) and further advanced by Keynes and postulates that higher income translates into higher consumption at the increased investment level (Bortis, 2008). A detailed association is provided by the theory between the aggregate income and rate of investment, given

the marginal propensity to consume (Gechert, 2012). According to the theory, the investment level is basically the discounted future profits, which is a function of the marginal efficiency of capital against the market rates of interest, which creates an equilibrium between money demand and supply (Wray & Tymoigne, 2008).

The theory supports that financial resources for investment are appropriated by commercial banks through creation of credit (Bortis, 2008). For instance, the borrower holds a debt and a deposit once a loan is granted, and the borrower spends the money on newly produced capital goods and the producer accepts deposits that can be deemed as transitory saving. Another party earns and transitionally saves the resources if they are spent later on, hence only the investment has created wealth. Thus, finance creates saving through investment (Gechert, 2012). The major critique of the theory is that even though there are more complex expositions that can into take account leakages owed to taxes and imports, the actual size of the multiplier is frequently mechanically calculated as the inverse of the marginal propensity to save (Wray & Tymoigne, 2008).

The theory postulates that it is through economic activities that have great significance to a nation that the multiplier effect of housing investments to a great extent can be discovered, for instance: - production of machinery and equipment, construction and provision of personal services and production of building materials (Ovsiannikova, Rabtsevich & Yugova, 2017). The theory also indicates that major sources of wealth in developed countries that is housing and stock markets (Ovsiannikova, Rabtsevich & Yugova, 2017). In this study, the theory supports that the renovation type of housing investments produce greater multiplier effect thus has larger significance for growth,

which change the market of housing investments into growing point of a nation's economy.

2.2.3 New Neoclassical Economics Theory

Kydland and Prescott presented the new neoclassical economics (NNE) theory to the finance and economics field in models of economic fluctuations (1980, 1982).The NNE theory is a combination of transaction cost economics and neoclassical economics and is a theory of the distribution and level of the national product grounded on the social endowments of production factors, like consumer preferences, technical conditions of production, labour and capital (Agboola, 2015). The theory contains an investment/consumption allocation decision to explore fluctuations between; a time allocation decision to examine fluctuations in market vs nonmarket time and, investment and consumption; and a production function that yields output from labor and capital inputs (Ohanian, 2010).

The neoclassical economics outlook examines the dynamic forces of quantities and prices via principally an institution-free outlook in which only function matters (Akinwunmi, 2012). The new classical economists emphasize's the importance of intertemporal optimization and rational expectations (Goodfriend, 2004). However, despite having taken over the classical tradition regarding the equilibration of markets, the new classical theory paradoxically debates on the dichotomy between the nominal and real economic factors (Ohanian, 2010). Critics of the theory contend that it ties the neoclassical economics demand and supply model to a flawed understanding of the operation of the property market, resulting in an oversimplification of economic reality (Agboola, 2015).

Further, the theory of NIE proposes economic hypothesizing enunciates the real-world dynamics of human relations and similarly highlighting the institutionally reliant nature of human economic exchange (Agboola, 2015). Under the theory, the cost of capital user is a critical determinant of capital demand, which may be consumer durables, investment goods or residential housing (Boivin, Kiley & Mishkin, 2010). In this the study, the theory postulates that for growth and development, mortgage institutions and financial intermediaries like banks allocate capital, mobilize savings, ease transactions, manage risk and monitor firms. Financial intermediaries are thought to be exploiting resources in this loan process, which results in growth and development.

2.3 Determinants of Growth

Growth is determined by a variety of variables that may be within or external to the business, and these factors influence the amount of production. Growth is determined by a variety of internal variables that vary from one company to the next. Such variables arise as a result of management's choices, which are taken in conjunction with the board of directors. Mortgage finance, interest rates, currency rate volatility, inflations, economics growth, money supply, and other external factors all contribute to growth in the long run. Among the variables that influence a company's internal operations are its governance, its size, capital market dominance, managerial efficiency, liquidity and financial leverage (Athanasoglou et al., 2005).

2.3.1 Mortgage Financing

In all market economies, mortgage financing makes up a significant portion of fixed investment (Hanişoğlu & Azer, 2017). Hence, mortgage financing is an important source of national capital creation, employment formulation and income generation.

Huge investments in housing inspires the demand for labor in the building and construction industries and thus influence income generation in the economy. Thus, housing is a significant component of household consumption and savings (Jagun, Daud & Samsudin, 2019). The housing sector has a significant impact on other economic sectors, as well as having a multiplier effect on some of them, such as the construction, paint, furniture, retail, and finance industries (Hanişoğlu & Azer, 2017).

According to Ahiadorme (2016), the cost and availability of mortgages are important factors of a country's housing markets. According to the investment multiplier theory, gross domestic product is greatly impacted by housing investments which solve the critical economic and social problem, that is; the establishment of population with high quality living conditions (Ovsiannikova, Rabtsevich & Yugova, 2017). The financial accelerator theory states that property valuations can affect sufficient credit indirectly, for it encourages consumption spending and investment. This causes an increase in economic activities and creates favorable prospects for future income flows from assets, therefore boosting valuations (Brissimis & Vlassopoulos, 2009).

2.3.2 Interest Rates

Interest rates have a big influence on property prices, both locally and globally. The amount of money available in an economy has a big impact on interest rates. For instance, when there is plenty of money in the economy, the interest rates are more likely to reduce and this will affect how a firm performs in the market. This will subsequently boost the market which will become more attractive for foreigners in the country. Vice versa will happen if the money supply in the economy reduces (Barksenius & Rundell, 2012)

Interest rates determine progress of real estate. Interest rate normally influence a real estate developer to provide housing for the real estate market in a huge way (Li, 2016). When interest rate goes up, the construction costs for the developers decreases such that prices in the real estate market increase. High interest rates also lead to increased cost of buying houses by buyers and this discourages buyers from taking loans to purchase houses. Therefore, the demand for housing decreases when interest rate increases and there's a general decrease of the trend in prices in this industry.

2.3.3 Inflation

Rates of inflation can affect the economy of a country substantially. For instance, during times of price movements and increments, prices of property such as buildings will increase. Therefore, when inflation in an economy rises, the general cost of property in that area is likely to increase. This will subsequently affect how firms perform financially. Therefore, many investors who engage in sale of property in the market usually include an allowance for inflation, (Biller, 2007).

The real estate market exhibits a long-term relationship with inflation. According to Blanchard (2010), rising demand has a beneficial effect on product prices. This theory further suggests that increase in output and the level of income create demand since higher levels of investment and consumption will be experienced. The general level of prices was greatly lower than that of the stock prices before the crisis period.

2.3.4 Unemployment

The housing market and unemployment were thought to be highly connected prior to the crisis. Here, real estate securities are developed more when unemployment levels reduce. For instance, if there are news on rising unemployment, this is likely to affect

the real estate market. An important lag is noticed during the entire sample duration of rising unemployment to how the property market responds (Lind, 2011).

This market has sentiments that are strongly negative but the labor market is not very easily affected by this. The labor market will still be skeptic and experience the high rates of unemployment despite prices of the real estate market recuperating during a crisis. During the pre-crisis era, there is the existence of a negative relationship that becomes barely significant during the crisis period (Birz & Lott, 2010). How the labor market in Kenya responds to the stock market of real estate however remains to be more correct. The government can use monetary and fiscal policies in the short term to enhance growth.

2.4 Empirical Review

The link between mortgage lending and economic growth has been studied locally and internationally, but the results are equivocal.

2.4.1 Global Studies

A research conducted by Okidim and Ellah (2013) explored how mortgage financing and capitalization affected economic growth in Nigeria. The study employed time series analysis, with secondary data spanning the years 1992 to 2010 being evaluated using the OLS model. The findings documented an insignificant positive relation between capitalization, mortgage financing and economic growth. The impact of mortgage finance on the real estate industry, which is the current study's emphasis, was not examined in this study.

Masino (2015) investigated the effects of macroeconomic and institutional instability on domestic private sector mortgage financed innovative investments. Data was collected from 44 countries and analysis carried out using panel regression models.

The study found that political, monetary, and real-world instabilities have a detrimental impact on the total amount of business-sponsored research and development. According to the study conclusion, a stable macro-institutional environment hinders the growth of mortgage financed innovations. This research focused on the factors that influence mortgage financing, whereas the current research will look at how mortgage financing affects the sector's growth.

Among African Countries, Asabere, McGowan and Lee (2016) examined the effect of mortgage financing on economic development with key emphasis on mortgage market size and GNI per capita. Data was collected from 15 African countries between 2000 and 2013 with the hedonic framework and the regression model being employed for analysis. The results indicate mortgage market size had a negative correlation with economic growth. A substantial positive association between mortgage financing and economic growth was seen in the regression results. The study focused on economic growth which does not always equate to growth in the real estate sector. The current study will focus on effect of mortgage financing on economic growth.

Udoka and Kpataene (2017) looked into the effects of mortgage lending on housing expansion in Nigeria. Data was collected for the period between 1990 to 2014 whereas analysis was carried out using the granger causality tests and the Error Correction (ECM) Model. This study also found a significant link between mortgage financing and housing growth while interest rates, inflation and mortgage deposit rate and GDP growth had a significant effect on mortgage investments. This study is the first to look into the influence of mortgage lending on real estate sector expansion.

Filotto, Giannotti, Mattarocci and Scimone (2018) examined how residential mortgages, real estate market affected Europe’s economic growth. Data was collected

from 16 European states between 2007 and 2015 and analysis carried out using the generalized VAR and vector autoregressive (VAR) approaches respectively. The study found that housing price index and mortgage shocks had a positive effect on GDP on the short-term whereas the housing price index had a negative effect but the volume of mortgages had a positive effective on mortgage supply. The study also found that on the long run volume of mortgages had positive effect on GDP while housing price index had a negative effect on GDP. This study was conducted in the development world and the circumstances there might be different from the ones in Kenya and therefore the need for the current study.

2.4.2 Local Studies

Kalui and Kenyanya (2015) conducted a study in Kenya to assess the various factors that obstruct mortgage financing access. In their study, they employed a descriptive research approach and regression equations to assess data on the association between access and mortgage finance parameters. According to the results, the most vital factors influencing access to mortgage finance was mortgage costs, economic growth, income levels and credit risk. The impact of mortgage finance on real estate expansion, which is the focus of the current study, was not examined in this study.

Gwadiva (2017) investigated how mortgage finance affects Kenya's real estate sector's business results. The 80 corporations that make up the real estate composite index were the study's subjects. During January 2007 to December 2016, secondary data collection was undertaken in quarterly periods. The association was evaluated using a descriptive cross-sectional approach and a linear regression model. Mortgage financing, interest rates, exchange rates, and inflation, according to the statistics, were not significant indicators of Kenyan real estate performance. Mortgage financing is

theoretically expected to influence growth of the real estate sector yet it was not considered as one of the variables in this study.

Irandu (2017) looked into the effect of macroeconomic factors on Kenyan real estate development. Interest rates, inflation, economic growth, money supply, capital, credit growth, and exchange rates were among the independent variables. During January 2007 to December 2016, collection of secondary data was undertaken in quarterly periods. Kenya's real estate growth has been proven to be significantly influenced by economic growth. Money supply, interest rates, currency rates, capital, credit growth, and inflation were statistically negligible factors of growth in Kenya's real estate, according to the findings. This study considered other determinants of real estate development without taking into account mortgage financing.

Kieti and K'Akumu (2018) examined factors influencing investments in the mortgage-housing sector. Using a multivariate regression method, an empirical model was developed to investigate the underlying characteristics that drive Kenyan housing investments. The study documented that investments in the sector in Kenya was significantly driven by a collection of factors that include mortgage loan characteristics for instance: - type of mortgage, loan to value and mortgage cost as well as the macroeconomic environment and property attributes. The study did not examine at the relationship between mortgage lending and the rise of Kenya's real estate sector.

Mbuloh and Oluoch (2019) investigated factors influencing the demand for mortgage finance in Kenya. For the years 2011 to 2016, the study used a descriptive research style, and secondary data was analyzed using regression models. The study discovered a substantial link between mortgage loan demand and disposable income, home

prices, and interest rates. This study focused on the factors of mortgage financing, whereas the following study will examine the impact of mortgage financing on Kenya's real estate industry growth.

2.5 Summary of the Literature Review and Research Gaps

The projected association between mortgage lending and growth has been explained by a number of ideas. Financial intermediation theory, investment multiplier theory, and new neoclassical economics theory are the three. A number of significant growth-influencing elements have been discussed. Various research on mortgage financing and development have been conducted globally and locally, with the results reported in this chapter.

The previous sections' empirical research reveal that there are conceptual, methodological, and contextual gaps. Differences in operationalization of both mortgage lending and growth revealed conceptual gaps. Different researchers operationalized mortgage financing differently and growth was also operationalized differently. The above showed a gap in concepts that motivates research on the most effective measures of mortgage financing and growth.

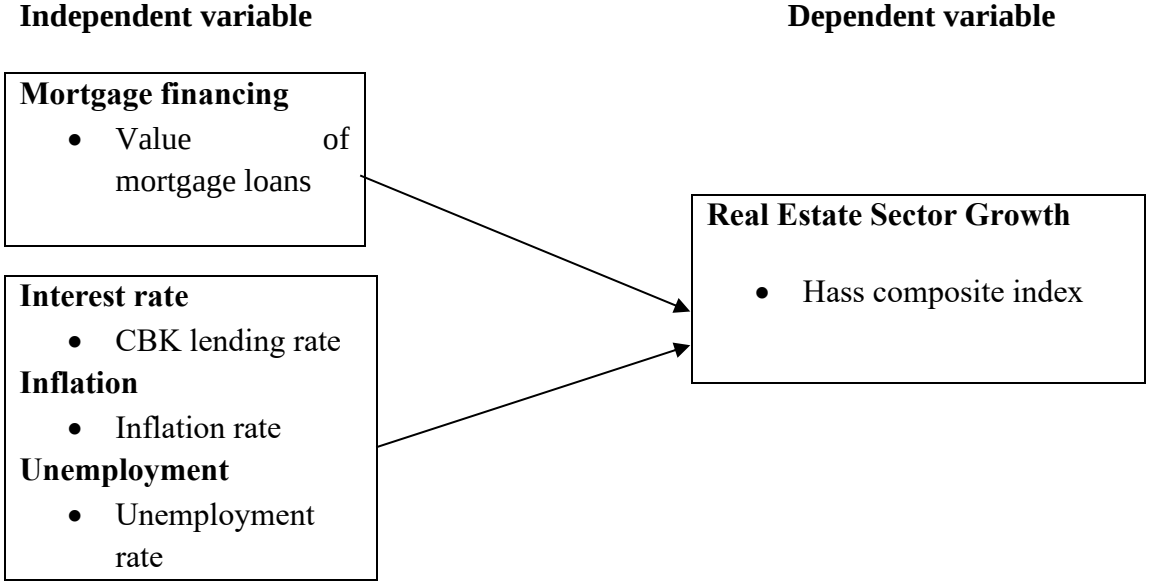
The gaps in methodology from prior studies were shown through limited consensus in the study methods utilized. Some of the methodologies used include; Some of the techniques employed include ordinal least square regressions, generalized momentum, sign change test, mean accrual test, non-linear random walks expectations, linear randoms expectations and cross-sectional regressions and others. From the above, a number of gaps in methodology were highlighted which give way for studies on determining the most effective study method to be utilized in investigating the relation between mortgage financing and growth.

Gaps in the context were shown through differences in the study settings. Many of the studies were done in western countries, with few being applied in Asia -Pacific countries but no studies were done in frontier economies. The above showed a gap in the context which motivates research on the relation between mortgage financing and growth in developing nations. Such gaps necessitate the need to conduct studies on mortgage financing and growth since there is limited empirical consensus. The study contributed to this area by determining how mortgage financing impacts growth of Kenya's real estate sector.

2.6 Conceptual Framework

The graphic below depicts the expected link between research factors. Mortgage finance, assessed as the value of mortgage loans in a particular quarter, was the study's independent variable. Interest rate, inflation, and unemployment rate were all included as control variables. The dependent variable was the real estate growth rate as measured by Hass composite index.

Figure 2.1: The Conceptual Model



Source: Researcher (2021)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In order to assess the influence of mortgage financing on the growth of the real estate industry, a research methodology must be developed, which outlines how the study was carried out. It is explained in detail in this chapter how the study was designed as well as how the data was collected and analyzed.

3.2 Research Design

The study was conducted utilizing descriptive designs. Descriptive design has been used because researchers seek to determine the present state of the variables (Khan, 2008). As the researcher tries to illustrate the nature of the issues at hand, the design seemed appropriate. It was also suitable since the nature and the way the phenomena is researched is of great interest. Furthermore, a descriptive research shows the factors that help respond to the research inquiry validly and correctly (Cooper & Schindler, 2008).

3.4 Data Collection

The research utilized secondary data collected on a quarterly basis from several sources such as Hass Consult, the Central Bank of Kenya and the KNBS from 2011 to 2020. The data on the dependent variable, the Kenyan immobilization sector growth were acquired from Hass Consult and was the quarterly growth index. The country's interest rate was the quarterly average bank lending rate and was obtained from the CBK. Data on inflation which was the quarterly inflation rate and data on unemployment which was the quarterly unemployment rate were obtained from KNBS.

3.5 Data Analysis

Version 24 of the SPSS program has been used for data analyses. The researchers reported the results quantitatively using diagrams and tables. The technique utilized to summarize the data collected was the descriptive statistics. Frequency, central tendencies measurements, percentage and dispersions were utilized to present data in tabular formats. Inferential statistics includes; Pearson correlations, multiple regression, ANOVA and determination coefficients.

3.5.1 Diagnostic Tests

It was necessary to conduct various diagnostic tests in order to assess how viable the research model was. These included the normality tests, a Stationarity test, multicolinearity tests, homogeneity tests for variances and autocorrelation tests. It is assumed that the data was regularly distributed under the normality assumption, and the assumption was established by looking at skewness, kurtosis, and the Shapiro Wilk test. It was decided to use the logarithmic transformation technique to convert and normalize one of the variables after it was determined that it was not normally distributed. By doing a Levene test and displaying residual plots, it was possible to determine whether or not the variance assumption was correct. In the event that the data did not pass the test, the researchers included robust standard errors into the model.

When the mean of data does not change over time, this is known as stationarity. Using unit root testing over all of the variables, it was discovered. Even in the unlikely case that non-stationary variables were found, it was conceivable that the estimates might change with time. A misleading estimate is produced by this ingredient. The effective differencing technique was employed to reduce bias when non- stationary variables

were found as a consequence of this procedure. In this instance, the null hypothesis was that the variable under investigation was nonstationary. In order to test this characteristic, the Augmented Dickey Fuller (ADF) test was used (Khan, 2008). Diffencing was used if the data did not pass the first round of tests.

Multicolinearity refers to the correspondence between the variables and has been analyzed by means of the correlation matrices and Variance Inflations Factor (VIF) where a value over 10 indicating multicolinearity. Any multicolinear variables were removed from the analysis, and a new measure was chosen to replace the colinear variable. In the final analysis, autocorrelation (serial correlation) was evaluated by use of statistics from Durbin Watson, with values 1.5 and 2.5 showed that autocorrelation was missing and if the premise was not uphold, that the research used robust standard error of the model.

3.5.2 Analytical Model

The regression model used was as follows:

$$Y= \alpha+ \beta_1X_1+\beta_2X_2+\beta_3X_3+ \beta_4X_4 +\varepsilon.$$

Where: Y = Growth of real estate sector given by percentage growth in the composite index on a quarterly basis. The composite index was obtained from Hass Consult.

α =model's y intercept

$\beta_1 \ldots \beta_4$ =are the regression coefficients

X_1 = Mortgage financing given by natural logarithm of the value of total mortgage financing quarterly

X_2= Interest rate provided quarterly by the averaging lending rate of the banks

X_3= Inflation given by inflation rate for every quarter

X_4= Unemployment as measured by quarterly unemployment rate

ε =error term

3.5.3 Tests of Significance

To determine the statistical significance of the model and the parameters that make it up, the researcher conducted a series of parametric tests on them. It was necessary to utilize the ANOVA model to establish if the overall model was significant, and the t-test was employed to assess how significant each individual variable was.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

4.1 Introduction

The current study's findings and conclusions are summarized in this chapter. The goal was to have an impact on the Kenyan real estate industry's development through mortgage lending. These parts contain descriptive statistic, diagnostic test, analysis of correlations, regression and discussion of results.

4.2 Descriptive Analysis

When descriptive statistics and standard deviations are combined, the mean, maximum, and lowest values of the variables under consideration are shown. The descriptive statistics for the variables analyzed are listed in the table below. Quarterly information on the factors under investigation was collected and analyzed using SPSS software during a ten-year period (2011 to 2020).

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Growth	40	.0520	.1228	.101725	.0177192
Mortgage financing	40	9.1666	10.9681	10.093205	.4649439
Interest rates	40	5.8333	18.0000	9.693665	2.8334484
Inflation	40	4.033	16.833	8.07400	3.606442
Unemployment rate	40	.092	.123	.10823	.008166
Valid N (listwise)	40				

Source: Research Findings (2021)

4.3 Diagnostic Tests

Prior to running the regression model, diagnostics tests were performed. Multicollinearity, normality, autocorrelation, and heteroscedasticity test were all performed in this instance.

4.3.1 Multicollinearity Test

Multicollinearity develops in a multiple regression model when two or more predictor variables have a substantial relationship. It is undesirable for the independent variables to have large correlations. A collection of parameters is said to be completely multi-colinear for some of the parameters in case there is an exact linear connection.

Table 4.2: Multicollinearity Test

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Mortgage financing	0.376	2.660
Interest rates	0.360	2.778
Inflation	0.392	2.551
Unemployment rate	0.372	2.688

Source: Research Findings (2021)

VIF value was utilized when VIF values less than 10 are not multi-linear. There should be no strong connection between variables for multiple regressions to apply. From the results, all the VIF variables are < 10 as shown in table 4.2 suggesting that the independent variables have no significant statistical multi-linearity.

4.3.2 Normality Test

To see if the data was normal, researchers used the Kolmogorov-Smirnov and Shapiro-Wilk tests. The alternative and null hypotheses are listed below.

H0: the secondary data was not normal.

H1: the secondary data is normal

If the p-value is greater than 0.05, the investigator will reject the null hypothesis, and vice versa. Table 4.3 summarizes the results of the test.

Table 4.3: Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Growth	Statistic	Df	Sig.	Statistic	Df	Sig.
Mortgage financing	.180	40	.264	.894	40	.790
Interest rates	.176	40	.264	.892	40	.784
Inflation	.178	40	.264	.893	40	.787
Unemployment rate	.181	40	.264	.896	40	.792

a. Lilliefors Significance Correction

Source: Research Findings (2021)

The researcher relied only on the alternative hypothesis because the data had a p-value larger than 0.05 and was uniformly distributed. Data was subjected to statistical test and analysis like analyses of variance, regression and Pearson's Correlation analyses..

4.3.3 Autocorrelation Test

A serial correlation test has evaluated the connection of error terms in different time periods. In order to acquire appropriate model parameters, the Durbin Watson serial correlation test was employed to analyze autocorrelation in the linear panel, a significant problem in panel data analysis that must be considered. The findings below are.

Table 4.4: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.771[a]	.595	.549	.0119054	1.540

a. Predictors: (Constant), Unemployment rate, Inflation, Interest rates, Mortgage financing

b. Dependent Variable: Growth

Source: Research Findings (2021)

According to the null hypothesis, there is no first-order serial/auto correlation. The 1.540 Durbin Watson statistical is between 1.5 and 2.5 and indicates that there is no serial connection.

4.3.4 Heteroskedasticity Test

As indicated in Table 4.5, the researcher used the Likelihood Ratio (LR) to investigate the heteroscopicity. The alternative hypothesis was that the error was homoscedastic. The probability ratio test with a 0.0000 p-value yielded a chi-square value of 36.52. Chi-square estimates were considerable at 1 percent, indicating that the data were homoskedastic.

Table 4.5: Heteroskedasticity Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of Growth
chi2(1) = 36.52
Prob > chi2 = 0.0000

Source: Research Findings (2021)

4.4 Correlation Analysis

The Pearson correlation was utilized to examine the correlations between the expansion of the real estate business and the study's characteristics (mortgage financing, inflation, interest rate and unemployment rate). According to the findings, there was a weakly positive but insignificant statistical connection between the two variables in question (r = .240, p = .136) between mortgage financing and real estate sector growth. Unemployment rate has a considerable and inverse Relationship to the growth of the property sector (r = -.761, p = .000). Even though there was an inverse connection between interest rate and inflation and the real estate industry, the link was not significant, as demonstrated by a probability value of 0.843 and 0.725 accordingly, which are greater than a 0.05 threshold..

Table 4.6: Correlation Analysis

		Growth	Mortgage financing	Interest rates	Inflation	Unemployment rate
Growth	Pearson Correlation	1				
	Sig. (2-tailed)					
Mortgage financing	Pearson Correlation	.240	1			
	Sig. (2-tailed)	.136				
Interest rates	Pearson Correlation	-.032	-.072	1		
	Sig. (2-tailed)	.843	.659			
Inflation	Pearson Correlation	-.057	-.265	.077	1	
	Sig. (2-tailed)	.725	.098	.635		
Unemployment rate	Pearson Correlation	-.761**	-.181	.028	.009	1
	Sig. (2-tailed)	.000	.265	.863	.956	

**. Correlation is significant at the 0.01 level (2-tailed).
b. Listwise N=40

Source: Research Findings (2021)

4.5 Regression Analysis

Mortgage finance, interest rates, inflation, and the unemployment rate were all used as predictor factors for the real estate sector's growth. The testing was performed at a 5% level. Table 4.7 displays the model summary statistics.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.771[a]	.595	.549	.0119054	1.540

a. Predictors: (Constant), Unemployment rate, Inflation, Interest rates, Mortgage financing
b. Dependent Variable: Growth

Source: Research Findings (2021)

The R squared indicator indicates how the explanatory variables may describe variations in the response variable. As indicated in Table 4.8, the R square was 0.595, indicating that changes in mortgage finance, interest rate, inflation, and the unemployment rate account for 59.5 percent of the real estate sector's growth. Other factors not included in this research account for 40.5 percent of the variance in real estate industry development in Kenya. The correlation coefficient (R) of 0.771 showed a significant connection amongst predictor factors and real estate sector growth.

Table 4.8: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.007	4	.002	12.847	.000[b]
	Residual	.005	35	.000		
	Total	.012	39			

a. Dependent Variable: Growth

b. Predictors: (Constant), Unemployment rate, Inflation, Interest rates, Mortgage financing

Source: Research Findings (2021)

The value of P obtained by ANOVA is 0.000, which is less than p=0.05. This demonstrates that the model's importance described the impact of mortgage financing, interest rates, inflation, and unemployment on Kenya's real estate industry growth.

The relevance of various variables was determined using the model coefficients. The statistics of t and values of p were used to accomplish this. This study is significant since it allowed the scientist to determine which independent variables were chosen (mortgage financing, interest rates, inflation and unemployment rate) significantly influences growth of the real estate sector in Kenya. The importance of the association between the two variables was shown by the sig. column's p-value. At a 95 percent

confidence level, a p-value of less than 0.05 was judged statistically significant, which is the most conservative estimate. Table 4.9 summarizes the findings. 4.9 Table.

Table 4.9: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.510	.064		8.011	.000
	Mortgage financing	.004	.004	.099	.867	.392
	Interest rates	-.000	.001	-.064	-.590	.559
	Inflation	-.003	.009	-.043	-.382	.705
	Unemployment rate	-.025	.004	-.745	-6.797	.000

a. Dependent Variable: Growth

Source: Research Findings (2021)

Table 4.9 shows that only the unemployment rate, with a p value less than 0.05, was a significant predictor of real estate industry development in Kenya. Other independent factors (mortgage financing, interest rates, and inflation) were minor predictors of real estate sector growth in Kenya, as evidenced by low t values and p values greater than 0.05.

The following regression was estimated:

$Y = 0.510 - 0.025X_1$

Where,

Y = Growth of the real estate sector

X_1= Unemployment rate

Using the constant = 0.510, we can see that if certain independent variables (mortgage finance, interest rates inflations, and unemployment rates) were rated zero, the real estate industry would increase by 0.510. Increasing the unemployment rate by one

unit would cause the real estate industry to expand by 0.025 percent less than it would otherwise grow. The other variables considered had no statistically significant differences.

4.6 Discussion of Research Findings

The goal of this study was to see how the predictor variables affected the growth of Kenya's real estate sector. The independent variables were mortgage financing, interest rates, inflation and unemployment rate. The study aimed to explain the real estate industry's expansion as a dependent variable. The Hass index was used to measure it on a quarterly basis. Correlation and regression analysis were used to examine the relationships between the independent and dependent variables.

The Pearson model revealed a weak and non-significant link between mortgage lending and real estate industry growth. Interest rates and inflation showed a negative but slight association with the real estate sector's growth, according to the data. In Kenya, the unemployment rate has a substantial, negative, and statistically significant link with real estate growth.

The independent variables considered account for 59.5 percent of variances in real estate industry growth in Kenya, according to the model summary. In this study, the chosen predictor variables were found to have explanatory power that was fit at a 95 percent confidence level, as shown by their F-value of 12.847 and p value of 0.000, which is less than the significance threshold of 5 percent. Thus, the overall model used in this research proved to be a viable prediction model for understanding the development of the Kenyan real estate industry.

This research is in contrast with Asabere, McGowan and Lee (2016) who examined the effect of mortgage financing on economic development with key emphasis on

mortgage market size and GNI per capita. Data was collected from 15 African countries between 2000 and 2013 with the hedonic framework and the regression model being employed for analysis. The results indicate mortgage market size had a negative correlation with economic growth. There was a substantial positive association between mortgage financing and economic expansion, according to the reported regression results.

This study concurs with a study conducted by Okidim and Ellah (2013) that explored how mortgage financing and capitalization affected economic growth in Nigeria. The study employed time series analysis, with secondary data spanning the years 1992 - 2010 being evaluated using the OLS model. The findings documented an insignificant positive relation between capitalization, mortgage financing and economic growth.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The primary purpose of the research was to determine how mortgage finance influences the growth of Kenya's real estate industry. The findings from the preceding chapter are summarized in this section, as well as the research's conclusions and limitations. It also suggests policies which may be used by policymakers. The chapter also makes recommendations for future research.

5.2 Summary of Findings

The research evaluated the contribution of mortgage finance in Kenya to the growth of the real estates industry. Mortgages, interest rates, inflation, and unemployment were all included in the study as separate variables. The research utilized cross-sectional design for analysis and data collection. Secondary data have been acquired from CBK, KNBS and HASS Consult and processed using version 24 of the SPSS program. The research utilized data over a period of 10 years.

The findings revealed a positive and minor link between mortgage finance and real estate sector development in Kenya. Furthermore, the correlation findings indicate that interest rate and inflation are feeble, unfavorable and statistical insignificantly linked to real estate expansion. However, the unemployment rate was strongly positive and statistically significantly linked to Kenya's real estate development.

The R-square coefficient was 0.595, which means that the predictors chosen may explain 59,5% of growth changes in the Kenya real estate sector, whereas 40,5% of growth changes in the real estate sector relate to other factors not addressed by this study.

The research revealed that independent factors were strongly correlated with real estate development (R=0.771). ANOVA emphasizes that F statistics with p=0.000 are significant at 5 percent level. This demonstrates that the model was capable of capturing the impact of independent variables on the growth of the Kenyan real estate business. The regression results suggest that if all of the independent variables were rated zero (mortgage finance, interest rates, inflation, and unemployment rate), growth would be 0.510. An increase of one unit in the jobless rate would result in a 0.025 decline in real estate sector growth. The remaining factors (mortgage financing, interest rates, and inflation) were shown to be statistically unimportant.

5.3 Conclusion

The results of the research indicate that Kenya's development in the real estate industry is adversely affected by the unemployment rate. The research finds that the higher unemployment rate leads to a significant decrease in growth in the property sector. The research revealed that mortgage finance had a beneficial impact, albeit not significant statistical, on development in the real estate industry in Kenya. This means that, the greater the mortgage finance, the higher the growth rate, although not much, of the immobilized industry. The research also finds that while interest rate and inflation have an adverse impact on industry growth, the impact is not statistically meaningful.

This research finds that the factors selected for investigation – mortgage finance, interest rate, inflation and the unemployment rate – influence real-estate development, explaining 59.5% of the growth variations. The finding that the independent factors account for 59.5% of changes in immovable growth means that the non-model variables explain only 40.5% of variations in the industries. It is sufficient to infer that

the factors highlighted substantially influence the growth as demonstrated in the ANOVA summary by p values less than 0,05.

The findings of this study are in agreement with Filotto, Giannotti, Mattarocci and Scimone (2018) who examined how residential mortgages, real estate market affected Europe's economic growth. Data was collected from 16 European states between 2007 and 2015 and analysis carried out using the generalized VAR and vector autoregressive (VAR) approaches respectively. The study found that housing price index and mortgage shocks had a positive effect on GDP on the short-term whereas the housing price index had a negative effect but the volume of mortgages had a positive effective on mortgage supply. The study also found that on the long run volume of mortgages had positive effect on GDP while housing price index had a negative effect on GDP.

5.4 Recommendations

The results of this research have shown that the unemployment rate has had a negative and substantial impact on the development of the real estate industry in the nation. It recommends that steps are needed to guarantee that variables that impact existing unemployment levels are properly handled in order to ensure that the current unemployment rate does not negatively affect the real estate industry and the economy in general. If the nation can control the current unemployment rate, the immobilization sector would increase and eventually the development of the economy as a whole.

The results have shown that mortgage finance has a favorable but not substantial impact on Kenya's real estate development. This means that the real estate industry will expand if the mortgage financing rises, but the amount of expansion may not be

significant statistically. The research proposes that decision-makers adopt steps to enhance mortgage finance in the nation, since this would lead to development in the real estate industry and possibly also other areas of the economy.

The research showed that inflations and interest rate negatively impact Kenya's real estate growth sector. The research suggests that commodity prices should be regulated on the market since price growth leads to inflation, which may have a negative effect on the immovable sector's development. The research suggests that interest rates be controlled since they influence the development of the real estate industry.

5.5 Limitations of the Study

The timeframe chosen was 10 years from 2011-2020 in this research. There is no evidence that over a longer period comparable findings will stay the same. Furthermore, it cannot be evaluated if the same results will take place after 2020. More time is more trustworthy since it includes instances of significant economic shifts such as recessions and booming.

The greatest constraint for this research was data quality. The results of this study cannot be reliably inferred to be a true reflection of the situation at hand. The accuracy of the data used in the research has been assumed. In addition, there has been a lot of incoherence in measuring the data owing to the existing circumstances. In contrast to primary data, the research used secondary data. Some of the drivers of development in the real estate industry have been taken into account and not all due to the restriction of data availability.

Multiple linear regression models were utilized to finish the data analysis. The investigators would be unable to generalize the results exactly due to the constraints involved with using the model, such as erroneous and misleading results resulting

from a change in variable value. When data is added to a regression model, it can no longer be run using the previous model.

5.6 Suggestions for Further Research

The purpose of this research was to see how mortgage finance affected the expansion of the domestic real estate market. A study focusing on primary data or a mix of primary as well as secondary data is suggested in order to identify qualitative elements which may be overlooked in this investigation.

The study did not take into account all of the independent elements that drive the growth of the immobilization business. The study suggests that more research and investigation be carried out in this area and that additional factors be included in the study and analyses. Factors such as the money supply, balance of payment, exchange rate, poverty level and other factors. Displaying each of these factors' impact on the development of the real estate sector will allow policymakers to choose what instruments to employ for controlling sector growth.

Due to constraints in data availability, the research concentrated on the last 10 years. Additional research should utilize a broader range of data to validate additional data. It was also restricted, since only the real estate industry was concerned. Further research should also be carried out in other areas. Finally, the researcher used a multiple regression model to confirm or deny the findings, and future researchers should use different ways to confirm or deny the findings.

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APPENDICES

Appendix I: Research Data

Year	Quarter	Mortgage financing	Interest rate	Inflation	Unemployment rate	Growth
2011	1	10.221	6.917	16.833	0.092	0.112
	2	9.847	6.750	15.920	0.094	0.107
	3	9.584	6.000	13.393	0.097	0.119
	4	10.427	6.000	10.300	0.098	0.123
2012	1	10.485	5.833	7.850	0.098	0.111
	2	10.126	6.083	5.867	0.099	0.114
	3	9.915	6.500	4.707	0.099	0.119
	4	10.772	15.167	4.033	0.100	0.122
2013	1	10.458	18.000	4.157	0.100	0.106
	2	10.053	18.000	6.013	0.103	0.107
	3	9.767	15.333	9.020	0.104	0.113
	4	10.630	11.667	12.777	0.104	0.117
2014	1	10.279	9.500	15.827	0.104	0.110
	2	9.849	8.833	16.290	0.105	0.107
	3	9.592	8.500	14.297	0.106	0.111
	4	10.423	8.500	10.697	0.106	0.114
2015	1	9.965	8.500	7.257	0.106	0.109
	2	9.570	8.500	5.043	0.106	0.108
	3	9.293	8.500	4.563	0.107	0.107
	4	10.159	8.500	5.387	0.107	0.105
2016	1	9.742	8.500	6.203	0.107	0.106
	2		9.000	6.827	0.107	0.106

Year	Quarter	Mortgage financing	Interest rate	Inflation	Unemployment rate	Growth
		9.383				
	3	9.167	11.500	7.237	0.108	0.106
	4	10.008	11.500	6.977	0.109	0.104
2017	1	9.944	11.500	6.667	0.110	0.103
	2	9.530	10.833	6.657	0.111	0.104
	3	9.245	10.500	6.390	0.111	0.104
	4	10.097	10.500	6.437	0.112	0.099
2018	1	10.586	10.000	6.840	0.113	0.099
	2	10.180	10.000	6.590	0.114	0.100
	3	9.894	10.000	6.470	0.114	0.100
	4	10.739	10.000	6.403	0.116	0.094
2019	1	10.813	9.500	6.483	0.117	0.097
	2	10.397	9.000	7.723	0.118	0.098
	3	10.109	9.000	8.323	0.119	0.098
	4	10.968	9.000	8.153	0.119	0.092
2020	1	10.219	9.0000	7.360	0.121	0.055
	2	10.743	9.0000	5.683	0.122	0.053
	3	10.596	9.0000	4.703	0.123	0.052
	4	9.906	8.8300	4.603	0.123	0.055