EFFECT OF SELECTED MACROECONOMIC FACTORS 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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DEDICATION

This research project is dedicated to my parents, Mr & Mrs Ernest Kamau, my husband, daughter, and siblings for the support they have given me through my academic journey.

May God bless them.

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
APT	Arbitrage Pricing Theory
CPI	Consumer Price Index
GDP	Gross Domestic Product
IFE	International Fisher Effect
KNBS	Kenya National Bureau of Statistics
NSE	Nairobi Securities Exchange
ROE	Return on Equity
SACCO	Savings and Credit Cooperative Societies
SPSS	Statistical Package for Social Sciences
VAR	Vector Auto Regression
VIF	Variance Inflation Factors

ABSTRACT

Macro-economic variables in Kenya have been fluctuating overtime due to government policies and the law of demand and supply. Some of the macroeconomic issues that the nation has faced include rising prices, fluctuating interest rates, rising external debt, and exchange rate volatility. Along with a growing current account deficit, the value of the Kenyan shilling has recently declined significantly against the majority of the traded international currencies. These adverse macroeconomic trends could cause serious issues with the real estate sector's expansion. The objective of this research was to determine the effect of selected macroeconomic variables on Kenya's growth of the real estate sector. The study was based on modern portfolio theory, international fisher effect theory and arbitrage pricing theory. The independent variables were exchange rate, interest rate, inflation and unemployment rate. The dependent variable that the research attempted to explain was the growth of the real estate sector in Kenya. The data was collected on a quarterly basis over a period of ten years (from January 2012 to December 2021). A descriptive research approach was employed in the research, with a multivariate regression model used to examine the connection between the study variables. The study's findings yielded an R-square value of 0.526, indicating that the chosen independent variables could explain 52.6 percent of the variance in Kenya's growth of the real estate sector, while the other 47.4 percent was due to other factors not investigated in this study. The F statistic was significant at a 5% level with a p=0.000. This suggests that the model was adequate for explaining growth of the real estate sector in Kenya. Further, the findings demonstrated that exchange rate had a negative and significant influence on Kenya's growth of the real estate sector. Interest rate and inflation had no significant influence on Kenya's growth of the real estate sector. Unemployment rate had a significant negative influence on growth of the real estate sector in Kenya. The study recommends that there is need to manage the current levels of unemployment since they have a major impact on real estate sector growth. Policy makers should also stabilize the existing levels of exchange rates as a depreciation of the currency adversely affects real estate sector growth. The study further recommends the need for future researchers to conduct a study for a longer period of time such as the last 20 years to capture the effects of economic cycles.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Growth is a management area that remains and will likely to be the attention of management and scientists for a lot longer because of its fundamental importance in the operation of a business. Because of the significance of growth, significant efforts have been made in terms of variables contributing to its manifestation or no realization throughout time to comprehend it (Abata, 2014). There are a number of academics and practitioners interested in the connection between macroeconomic variables and growth. Interest rates, GDP, currency rates, and inflation are all basic macroeconomic variables that affect growth (Gan, Lee & Zhang, 2006).

This research was anchored on various theories including the modern portfolio theory, international fisher effect theory and Arbitrage Pricing Theory (APT) that have sought to shed light on associations between macro-economic factors and growth. The modern portfolio theory helps this research, since financial market prices show the disparities in macroeconomic factors. Macro-economic factors influence on returns of financial market is thus replicated on the growth of the firms and the economy as a whole. In addition, Ross (1976) combined the traditional APT model with macroeconomic factors and return on financial asset. The fisher theory contends that because of likelihood of arbitrage opportunities in financial market that occur in capital flows form, the real interest rates throughout countries are equal. This theory informs the current study in that interest rates fluctuations encourage or discourage levels of borrowing (Fisher, 1930).

The focus of this study was on the real estate sector. World Bank (2018) revealed that for the past two decades, the real estate market in Kenya has tremendously grown.

This has played a huge part in contributory to the nation's Gross Domestic Product (GDP). The growth is mainly driven by improvement in different infrastructures such as good roads, good connection to different utilities and improved airport infrastructures among others. In addition to that, rapid growth in urbanization has also resulted to the increased GDP in Kenya. Cytonn (2020) however observes that macroeconomic factors in Kenya have been unstable and this poses a threat to the growth of the real estate sector.

1.1.1 Selected Macroeconomic Factors

Chimkono (2020) define macroeconomic factors as the determinant variables which influence countries economic position regionally and globally. These macroeconomic indicators comprise; unemployment, inflation, interest rates, inflation and per capita income. Hendry (2016) define macroeconomic factors as variables that influence the outcome of an economy in a wider level. They include the exact interest rates, inflation, public debt, unemployment rate, money supply and economic growth. Macroeconomic factors denote variables whose slight shift results in a global and material change that is spelt out in the economy or even at the national level (Kotha&Sahu, 2016).

Macroeconomic factors are of importance to policymakers as their impact is not only felt by individuals but also the larger population. In addition, over the long term, macroeconomic factors determine the levels of investment, consumption, factor productivity, economic policy, and institutional environment (David &Ampah, 2020). Kwon and Shin (2017) hold that countries with a strong currency experience higher performance while high unemployment rate leads to reduced performance. Further, countries with high inflation experience low performance, as the value of savings

decreases in the financial system. Mbaabu (2020) holds that high interest rates discourage usage of financial services leading to low growth.

The measurement of macroeconomic factors varies depending on the exact variable in question. Exchange rate measures the strength in a country's currency and is usually given by the rate of the home country to a given foreign currency (Kirui, Wawire &O nono, 2014). Average lending rate is usually used as measure of interest rates (Khan & Sattar, 2014). Inflation is usually measured using either the Consumer Price Index (CPI) or the inflation rate while unemployment rate is measured as the ratio of unemployed people to total labour force (Ozili, 2018). The current study operationalized macro-economic factors in relation to exchange rates, interest rate, inflation rate and unemployment rate.

1.1.2 Growth of the Real Estate Sector

Deitiana and Habibuw (2015) suggest that growth is a technique adopted by companies to increase their revenues through selling goods or money generated from service provision. Fatihudin and Mochklas (2018) propose that profitability expansion is accomplished through reducing expenses. Thus a business growth may be defined as a rise in revenue, a growth in the company via its merger or acquisition of other companies, an increase in profits, service and product development, a diversifying and a spike in the proportion of workers of a company. Financially, growth may be defined as increasing a company's revenues and sales. Gudda (2015) said that business expansion is the enhancement of a significant metric of a company's performance. This may be achieved either by raising a primary business or a company's revenue by growing sales revenue or service income, improving business profitability via cost reduction.

Growth is viewed as an important overall measure of an economy's wellbeing. It is thus used to track the overall growth trend of an economy over time and can thus be used to track the effectiveness of economic policies instigated with an aim of enhancing growth overtime. As a result, knowledge of the perceived drivers of growth is important in order to create policies that can enhance these key sources of growth that have been known to include, physical capital accumulation, production efficiency in input processing, human capital development and increasing investment in new ideas via research and development (Mogaka, Kiweu & Kamau, 2015). Further, achieved positive growth may help in the realization of various macro-economic objectives that include poverty reduction, increased employment, public services improvement and reduced debt balances (Haller, 2012).

The most common metric for growth is national income per capita; a rise in per capita income acts as an indication for economic wellbeing improvement. Physical resources also play an important part in economic development, since they emphasize the notion of broad capital as evidenced in constant or rising returns (Lucas, 1993). In a sector of the economy, it is standard practice to evaluate growth by increasing revenue, increasing profit, increased market share, by improving the firm's worth, by making the contribution to the GDP over a certain financial year (typically one year) among other things (UNCTAD, 2017). This study measured growth using the composite growth index provided by Hass Consult Ltd.

1.1.3 Selected Macroeconomic Factors and Growth

McKinnon (1973) theory states, variables like inflation, exchange rate and real interest rate should have close monitoring since they impact various economic fundamentals and performance of firms. For instance, they contend that raising

interest rates below market equilibrium will only boost the demand for investments, not actual investments. Contrarily, the market efficiency theory states that all the variable prices ought only to be impacted by demand and supply and not any other factors.

Gan, Lee and Zhang (2006) conclude certain macroeconomic variables including GDP, interest rate, exchange rate influences performance of a firm. Financial information shows that investors assume that GDP and other macroeconomic have a substantial impact on the unpredictability of earnings. Consequently, macroeconomic variables impact individuals' investment choice and influence numerous scholars to examine the association between performance and these variables (Peansupap & Walker, 2005).

Fama's idea of effective market hypothesis (1970) states that security prices will always represent all information available in an efficient market. The management of the bank as such should thus respond rapidly and correctly to current and expected macroeconomic changes via the adaptation or preparation of the adjustments. Such caution helps to guarantee development not just now but also in the future. Macroeconomic factors influence profitability of companies. Variations in macroeconomic factors could provide opportunities and threats to industry players at the same time; those with adequate preparations will gain from opportunities thereby improving their performance, while those with inadequate preparations and threats may afflict them, causing them to perform poorly (Gerlach, Peng & Shu, 2005).

1.1.4 Real Estate Sector in Kenya

Kenya's real estate market has experienced exponential expansion as a result of the construction of numerous malls across the nation. An expanding middle class with

greater spending power and increase in urbanization are the main factors driving the retail submarket's rise. Due to the expansion of the services industry, the supply of offices in Kenya has expanded (Okumu, 2017). Due to the rising demand for real estate, the Nairobi Securities Exchange established the Real Estate Investment Trust (REITs) market in 2013. The market for REITs is heavily controlled. This investment instrument is crucial because it facilitates collective investments in real estate where both retail and corporate investors pool their cash and finance real estate projects (Muia, 2017).

Macro-economic variables in Kenya have been fluctuating overtime due to government policies and the law of demand and supply. Some of the macroeconomic issues that the nation has faced include rising prices, fluctuating interest rates, rising external debt, and exchange rate volatility. Along with a growing current account deficit, the value of the Kenyan shilling has recently declined significantly against the majority of the traded international currencies. These adverse macroeconomic trends could cause serious issues with the real estate sector's expansion (World Bank, 2018).

As a result 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 in Kenya, seeking to extend production and supply of inexpensive housing, the regulatory frameworks, and integrated human settlement planning and development. The real estate market in the nation 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

Growth is an area of management which, due to its importance in the life of a nation or organization, continues to be the attention of management and academics for a long period. This led to research focusing on different external variables and also internal problems that were believed to lead to different development. As per Levine (1996) macroeconomic factors like unemployment, exchange rates, interest rates, money supply and inflation affect growth in a number of ways. Policy makers need to identify macro-economic factors influencing their growth to develop efforts that improve their performance by effectively managing the main factors (Asaolu & Ogunmuyiwa, 2011).

Kenya's real estate sector experienced a challenging macro-economic climate with a rate limit on August 2016. Other macroeconomic issues affecting the industry include increasing prices, unpredictability of interest rates and fluctuation in exchange currencies. Such unfavorable macroeconomic factors may cause great problems in real estate sector growth in Kenya. Although the Kenyan real estate industry 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.

Several investigations have been done in this area internationally. Zulfiqar and Din (2015) studied the link amongst macroeconomics variable and performance in Pakistan textile sector. Panel data was utilized and regression analysis adopted. The conclusions exhibited a weak positive link existed between inflation and firm

performance. Baba and Nasieku (2019) investigated how macroeconomic factors affect the performance of Nigerian commercial banks. The empirical results showed that exchange rate, unemployment rate, and interest rate are negatively and significantly related with the performance of banks whereas inflation was insignificantly related with the performance. An increment in exchange rate positively influences the performance of banks while an increment in the interest rates worsens performance. Although these studies correlate to the current research, they are done in a diverse context and their focus was not real estate sector.

Locally, Mwaniki (2017) scrutinized macroeconomic variables effect on average performance of deposit taking SACCOs in Kenya and established that only money supply had significantly affected their performance. Kamamia (2020) undertook research to examine macro-economic factors effect on investment banks performance in Kenya and established that independently, interest, inflation and exchange rates are substantial investment banks performance determinants in Kenya whereas economic growth is not a substantial determinant. Nderitu (2020) focused on how macro-economic variables impact performance of Kenyan banks and arrived to a conclusion that interest rate and economic growth affect performance positively while exchange rates and inflation rates possess negative substantial impact.

Although prior research in this area has been done, the results have been mixed. This can be explained by the differences in operationalization of the variables. In addition, some macro-economic variables have been left out. Further, the studies have not focused on the growth of the real estate sector in Kenya. This study sought to contribute to this argument by responding to the research question: What is the influence of selected macroeconomic factors on growth of real estate sector in Kenya?

1.3 Research Objective

The study's objective was to assess the effect of macroeconomic factors on growth of Kenya's real estate sector.

1.4 Value of the Study

The results of this study will have implications for the administration of real estate companies, decision-making bodies, and the finance literature. The management of real estate firms may use the conclusions and study recommendations to formulate effective strategies which will mitigate the effects of macro-economic factors, enhance growth of the sub-sector.

The research will too be valuable to policy makers like the governments and other economic bodies responsible for the formulation of various policies on macroeconomic factors and growth. This study is useful to the bodies in charge of policy-making who may use the recommendations from the study to design effective macroeconomic strategies that would enhance growth.

Finally, this review will enhance to the theoretical existing discussion on the arbitrage pricing theory, modern portfolio theory, and international fisher effect theory. The research will as well add value to the practical publications on macroeconomic factors and growth. In addition, studies may also be conducted in line with the recommendation and suggestions for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter's main aim is to go through theories that are basis of the study. More so, the chapter discusses the prior empirical studies done pertaining to the research topic and areas related to it. Additionally, the chapter contains other sections which elaborates on the determinants of growth, shows the conceptual framework which illuminate on the study variable relationships, study gap and finally a summary of literature.

2.2 Theoretical Framework

This section summarizes key theories explaining link between macroeconomics variables and growth. APT, contemporary portfolio theory and the International Fisher Effect hypothesis are among the theoretical review addressed.

2.2.1 Modern Portfolio Theory

Markowitz (1952) coined the theory on his write up for portfolio mixture. This theory put an emphasis on how it is possible to maximize expected returns by creating weighted portfolio utilizing risks thresholds. The theory stated that institution may build portfolio that optimize anticipated return at specified risk levels. This theory states that profit can be maximized by choosing proportions of different investments that will lower the investment risk level.

Unsystematic risks and systematic risks were defined by the theory as the two categories of hazards that investors should be aware of. Unsystematic risk is linked to the degree of volatility of a single investment, whereas systematic risk is inherent in market volatility across the board or in particular segments of it. Investors are

consequently advised to combine their portfolios by ensuring that any specific risks incurred by one investment are mitigated by fewer specific risks in other investments (Cuthbertson, 2004).

This theory is critiqued by behavioural finance theorists for its assumptions and failure to consider the role of human behaviour in maximizing returns. According to Brueggeman and Fisher (2011), macroeconomic variables generally influence the business environment within the economy. An environment of volatile economic variables including inflationary pressures and volatile exchange rates, infer that returns to businesses and financial firms in particular shall fluctuate. Unstable returns therefore dominate performances of financial firm like environment fluctuates hence affecting their growth. Policy makers should thus be keen on macro-economic variables as they can have an impact on growth. This research has contribution to the current research as it identifies macro-economic factors as variables that can influence growth. The theory was relevant as it relates variables like interest rates, exchange rates, unemployment and inflation with growth of firms or sectors.

2.2.2 Arbitrage Pricing Theory

The APT model was advanced by Ross (1976). Various economic variables, according to the theory, have an impact on the returns of a particular instrument via their impact of discount rate and future dividend (Subedi & Shrestha, 2015). APT correlates with market portfolio concept, as per APT persons exhibit varying portfolio of investments depending on the specific systematic risks they encounter. Because it utilizes several variables to demonstrate shared and systemic risk, the APT is a multi - factor model, and majority empirical research claims that it produces better results than the capital asset pricing model (Waqar & Mustabsar, 2015).

The idea developed theoretical frameworks that combine return with certain factors that may influence income volatility sources (Shrestha & Subedi, 2015). APT utilizes macroeconomics indicators to ascertain the values of assets. The theory believes that different macroeconomic variables may really influence asset prices other than beta risks systems (Waqar & Mustabsar, 2015).

Certain macroeconomics parameters impacting asset prices of financial instruments like: government internal borrowing, balance of payment, inflationary rate, investor confidence level, prevailing unemployment levels, changes in expected returns on securities and interest rate yield curve shifts (Amarasignhe, 2015). Based on linear connection among stock price and macroeconomic variables, macroeconomics factor may be assumed to have an impact on securities value. The asset's or security's monetary worth may thus be called the entire anticipated return and any unanticipated return on the assets (Cuthbertson, 2004). This study relates macroeconomic factors to returns of firms and therefore it is relevant to the current study. The study hypothesizes a negative effect of interest rate, inflation, exchange rate and unemployment rate on growth.

2.2.3 International Fisher Effect Theory

International Fisher Effect theory (IFE) was proposed by Fisher (1930). The theory applies the market interest rate in explaining why there is change in interest rates over time. The IFE contends that interest rates changes balance out the exchange rates changes. The theory further contends that because of likelihood of arbitrage opportunities in financial markets that happen in terms of capital flows, the interest rates throughout countries are the same. Real interest rate equality suggests that inflation rates are higher in countries that experience interest rates that are high and as

a result the country's real value of currency reduces over time (Gopinath & Rogoff, 2014).

The interest rate theory of exchange rate expectations expounds on the association amongst foreign exchange rates and relative interest rates. If the IFE is to be considered, countries whose currencies are appreciating would have interest rates that are low enough and countries whose currencies are depreciating would have interest rates that are high enough to balance the anticipated gains and losses in currencies (Keynes, 2016).

IFE theory is critiqued to the fact that in the short term, the theory is an unreliable variable of estimating the changes in currency prices due to the existence of underlying and confounding factors that influence the rates of exchange. The IFE, proposes that foreign currencies that have comparatively high interest rates will incline to depreciates since the anticipated inflation rates is replicated in the high nominal interest rates (Gopinath & Rogoff, 2014). This theory was appropriate to the current research in that interest rates fluctuations encourage or discourage levels of investments and therefore growth in the agricultural sector.

2.3 Determinants of Growth

The variables that influence production level may be internal as well as external to the business. Internal variables vary from one company to the next and influence growth in various ways. Such variables derive from decisions made by management in collaboration with the board of directors. Growth is influenced by a number of external factors, including interest rates, exchange rate volatility, inflation, economic growth, unemployment (Athanasoglou et al., 2005).

2.3.1 Exchange Rates

Exchange rates and their impact on economic growth is considerable. Variations in currency's exchange rate have an impact on import prices, which include CPI and production costs. Its inconsistencies are transmitted to local pricing via a network of imported consumer goods prices. Variation in exchange rate have a direct effect on the economy on local pricing. Increases in demand for local goods is observed when factors that influence prices causes prices of imported goods and services to increase thereby reducing completion (Magweva & Marime, 2016).

Shift equilibrium causes an increase in pressure on local prices and nominal wages with an increase in demand. Additional increases in pressure will be transferred to local prices resulting from increases in wages. Depreciation in the exchange is a minor guarantee to the domestic industry since domestic costs of production rises at a slower depreciation rate in comparison to comparable import prices, which rises by complete depreciation. This scenario of depreciation in the currency creates a favorable condition production among local industry (Nwankwo, 2006).

2.3.2 Interest Rates

Interest rates have a significant impact on both domestic and international product and service pricing. The quantity of money in the economy has a significant impact on interest rates. For example, when the economy is flooded with cash, borrowing rates are more likely to drop, which will have an impact on how a company does on the market. As a result, the market will grow and become more appealing to tourists to the nation. If the amount of money in the economy decreases, the opposite will occur (Barksenius & Rundell, 2012).

Interest rates establish real estate growth. Interest rate normally influences 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

The economy of a nation can be significantly impacted by inflation rates. For instance, home values will rise during periods of price fluctuations and increases. When a result, the overall cost of goods is likely to grow as inflation develops in an economy. This will consequently have an impact on how profitable businesses are. As a result, many investors who participate in the market's sale of goods and services typically make an inflation allowance (Biller, 2007).

The real estate market exhibits a long-term relationship with inflation. Blanchard (2010) posits presence of a positive impact of increased demand on prices of products. 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

During the pre-crisis era, the real estate market and unemployment are seen to correlate in a highly negative manner. 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

International and local research have been performed supporting link among macroeconomic variables and growth, however the findings are mixed.

2.4.1 Global Studies

Pinjaman and Aralas (2018) sought to investigate how volatility of stock return is impacted by certain macroeconomics variable. Selected variables comprised of inflation rates, GDP, exchange rates, interest rate, financial crisis, money supply as well as economic liberalization. The dynamic stock results, instability assessment perceived that stock returns shakiness is consistent in behaviour where the previous instability will control the current stock returns. The study was conducted using a cross-sectional time series model. It was discovered that there was a strong link between the exchange rate, interest rate, GDP, inflation, financial crisis, economic liberalization, and stock return volatility.

Baba and Nasieku (2019) using explanatory research design examined how Nigerian banks financial performance is impacted by macroeconomic factors. The research made use of secondary data gathered from banks annual reports, World Bank, Nigerian bureau of statistics and research centers. 23 licensed banks in Nigeria participated in this study. The study applied return on equity (ROE) as performance measurement. The empirical outcome indicated unemployment rate, exchange rates, and interest rates are inversely and substantial associated with the performance of banks whereas inflation has an insignificant link. An increment in exchange rate positively influences the performance of banks while an increment in the interest rates worsens performance.

Kotha and Sahu (2019) analyzed both the short and long run association amongst select macroeconomics factors and performance of Indian Stock Market. Selected macroeconomic factors included T-bill rates, exchange rates, wholesale prices indices and money supply. Using data from 2001 to 2015, the study applied error correction and co-integration model (ECM) for data analyses. The study discovered existence of long run relation amongst BSE Sensex and the chosen macroeconomics indicator.

Chimkono (2020) did an investigation aimed on determining how macro and microeconomics variables impact commercial banks performance of Malawi accredited by the Malawi central bank. Secondary data was gathered from the audited financial reports and covered a fifteen-year period between 2000 and 2014. Publications prepared by the World Bank and reserved bank of Malawi were also used as sources of data. It was brought to light by the findings that the independent variables (lending interest rate, cost efficiency, and asset quality) significantly impact the performance of commercial banks. Moderating variables exhibited substantial

impact on the independent variables. Further, it was discovered that the credit risks have a negative influence of performance of banks.

In Sri Lanka, using secondary data collected between 1990 and 2012, Badullahewage (2020) investigated how macroeconomic variables impacted the performance of stock market. Macroeconomic variables comprised of inflation, GDP, money supply, interest and exchange rate. A strong relation was found between performance stock market and macroeconomics indicators. Rate of exchange and inflation had comparatively higher effects on performance.

2.4.2 Local Studies

Gwadiva (2017) explored how FDI inflows impact Kenya's financial performance of the real estate sector. The 80 companies that make up the real estate composite index served as the study's population. During January 2007 to December 2016, secondary data collection was undertaken in quarterly periods. A descriptive cross-sectional design and a linear regression model was utilized in analyzing the link. Findings showed that individually, FDI inflows, rates of interest, exchange rates and inflation were not substantial determinants of Kenya's real estate performance.

Mwaniki (2017) using descriptive research design sought to examine how average performance of 35 SACCOs registered by SASRA up to 2017 in Nairobi is affected by macroeconomic indicators. The study aimed on establishing the impact of interest, inflation and money supply on average performance. Quarterly data was collected for 20 years (1997 – 2016). Analysis was conducted using the vector error correction time series models. The outcome indicated that only money supply had substantial influence on returns on assets of deposit taking SACCOs.

Using inferential and descriptive statistics, Kamamia (2020) did an investigation how investment banks performance is affected by certain macroeconomics indicators. A descriptive survey design was adopted. The time frame 2008-2017 was period of the study and secondary data was acquired on a quarterly basis. Both inferential and descriptive statistics being utilized in analyzing the data. The outcome demonstrated that independently, interest rate, inflation rates and exchange rate are substantial determinants of investment banks performance in Kenya whereas economic growth is not a substantial determinant.

Mwangi (2020) wanted to know how exchange rate movement affected stock market volatility at NSE. 10 years monthly secondary data from 2007 to 2017 was collected. Multi linear regression model and descriptive research approach was applied to analyze associations amongst variables. The findings exhibited that individually, interest rate was insignificant stock market volatility determinants while inflation and exchange rates significantly are stock market returns determinants at the NSE.

Nderitu (2020) aims to determine to what degree macro-economic factors influence Kenya's banking sector performance. The period from 2009 to 2018 included inferential and descriptive statistic to examine the data gathered. SPSS software version 22 was applied in analyzing data and the outcomes were displayed in tables and graphs. The findings show that interest rate and economic expansion have a favorable effect on business banking performance, whereas exchange rates and inflation has serious undesirable impact on success in the banking system.

2.5 Conceptual Framework

The model below depicts the anticipated relationship between the research variables. The independent variables for the research was exchange rate measured as the rate of Kes to Usd on a given quarter, interest rate given by average lending rate, inflation given by inflation rate and unemployment given by unemployment rate. The dependent variable was growth of the real estate sector as measured by the Hass composite index.

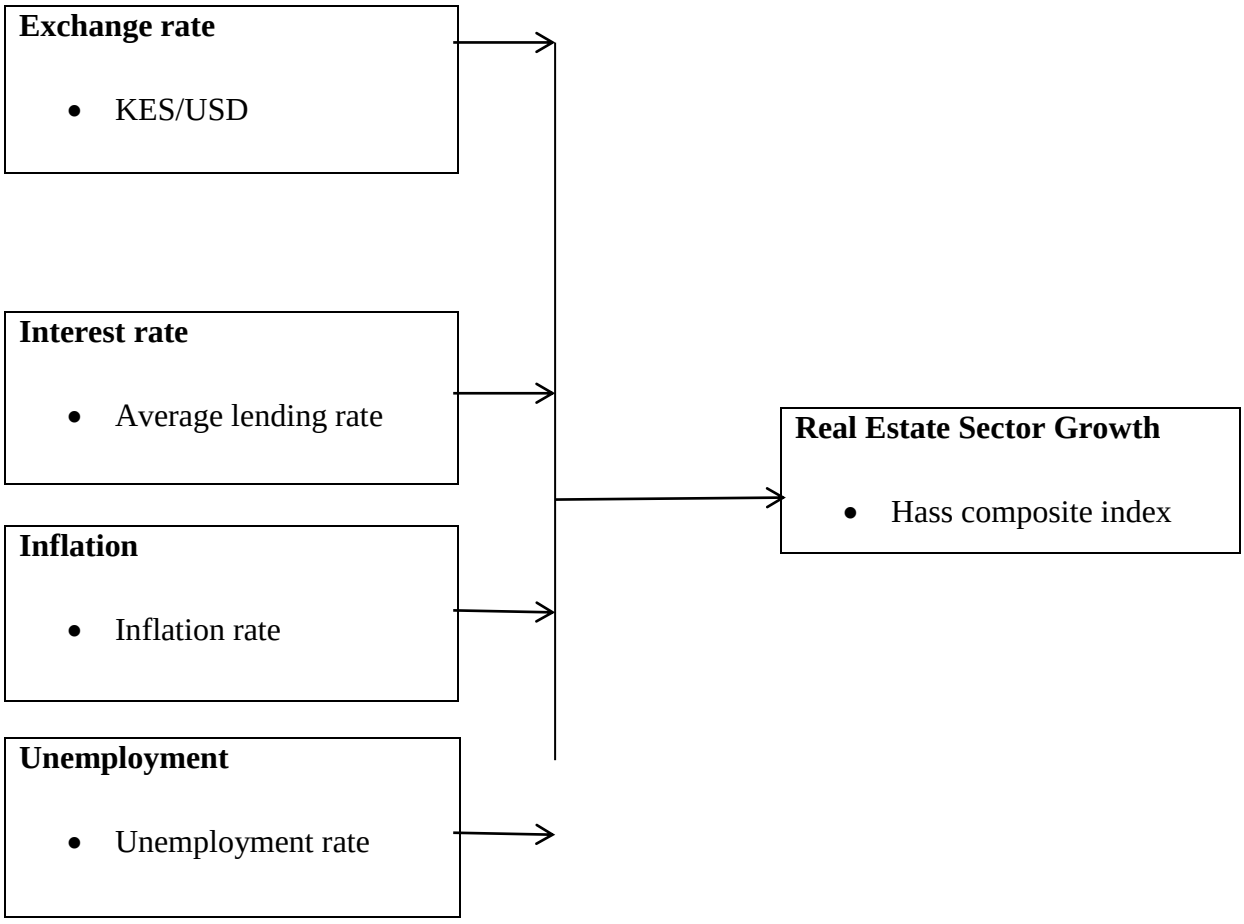

Figure 2.1: The Conceptual Model

Source: Researcher (2022)

2.6 Summary of the Literature Review and Research Gaps

There are a few theoretical frameworks which have expounded on the theoretically anticipated relationship amongst macro-economic variables and growth. Theories covered in this review were; APT, modern portfolio theory, and the IFE theory. The Key growth determinants have also been looked into in this chapter. More so, a few empirical research carried out only not locally though globally too on macro-economic factors and growth have been deeply examined. The findings of these investigations were debated.

Methodological, contextual and conceptual limitations are apparent from the evaluation of empirical research. Conceptually, the findings from extant empirical studies are inconsistent and this might be explained by the different operationalization of variables. Methodologically, previous studies have used different methodologies ranging from time series studies to panel analysis and this can clarify the variances in findings. Contextually, commercial banks have been the focus of the majority of research on these study factors and other sectors while the current study attention was drawn on real estate sector that have not received much attention.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter highlights the steps and methods embraced in the execution of the proposed study. It particularly converses the data collection methods, research design, operationalization of the variables, and data analysis techniques.

3.2 Research Design

The descriptive study design was adopted in this research to estimate the impact of Kenya's macroeconomic factors on growth. Cooper and Schindler, (2008), suggest that the most systematic research design is the descriptive one as it consists of a practical inquiry whereby the researcher does not directly control the independent variable due to their manifestation having already occurred or their inherent inability to manipulate. A defining study method was the most suitable as the research sought to creating a profile about the link between Kenya's macroeconomic factors on growth.

3.3 Data Collection

Data from the Kenyan Central Bank, KNBS and Hass Consult was used in this study, which was secondary in nature on a quarterly basis spanning 10 years (2012-2021). Hass Consult provided information on the dependent variable, the development of Kenya's real estate sector and for each quarter, the Hass index was collected. Data acquired from CBK was used to compute the country's interest rates which was the quarterly average bank lending rate and the exchange rate which was Kes/Usd. KNBS provided inflation statistics on the quarterly inflation rate, and unemployment data on the quarterly unemployment rate.

3.4 Diagnostic Tests

Diagnostic tests were carried out before engaging in equation estimation to make sure that there was no violations on the assumptions made in the traditional linear regression model. This is because, breaking of these assumptions leads to skewed and inefficient parameter estimations.

3.4.1 Stationarity Test

Stationarity means that all attributes (variance, means) of the data collected are constant and o not change with time. Spurious regression is a characteristic of a data that is non-stationary with time (Cooper & Schindler, 2018). This research tested for unit root using the Augmented Dickey Fuller (ADF) test. Robust standard errors were utilized whenever the data in this study could not pass the test.

3.4.2 Cointegration Test

Cointegration prior to the VAR analysis was carried out to see if the variables have a long-run or short-run correlation. For this research, Johansen test was used to detect cointegration.

3.4.3 Normality Test

All residuals of response variables are often considered normally distributed to mean in normality tests (Khan, 2018). This was established using Jarque-Bera tests. If the data fails the test, extra information was gathered. On the acquired data, the researcher also used natural logarithms.

3.4.4 Multicollinearity Test

A correlation matrix was adopted to find out the multicollinearity, adopting a threshold of 0.8 (Cooper & Schindler, 2018). Multicollinearity helps eradicate big standard errors that may result from minute standard errors and indeterminate

regression coefficients. The standard errors avoided would otherwise compromise the null hypothesis rejecting it or failing to reject it. Tolerance levels and variance inflation factors (VIF) were used. Any multicollinear variables was removed from the research and a new metric chosen and replaced with the colinear variable.

3.4.5 Autocorrelation

Durbin Watson test for serial correlation was employed in this study to determine autocorrelation. Khan (2018) says that failure to consider serial correlation leads to poor parameter estimates and also prejudiced standard errors. This test adopted a no serial correlation null hypothesis. Any data that that seemed to have cross-sectional dependency would be arrested through lagging of the dependent variable.

3.5 Data Analysis

Data analysis was done via the SPSS software version 24. Graphs and tables presented the quantitative conclusions. Measures of central tendency and dispersion were calculated using descriptive statistics, and standard deviation was provided for all the variables. The strength of the association among variables in the study was determined via correlation and a regression determined cause-effect characteristics among variables. Multiple regression linearly determined relation among study variables.

3.5.1 Analytical Model

The following regression model was utilized:

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

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

from Hass Consult.

α =Constant value in absence of predicator variables

$\beta_{1...}\beta_4$=are the regression coefficients

X_1 = Exchange rate given by natural logarithm of KES/USD on a quarterly basis

X_2= Interest rate computed by the average bank lending rate on a quarterly basis

X_3= Inflation rate given by inflation rate for every quarter

X_4= Unemployment as measured by quarterly unemployment rate

ε =error term

3.5.2 Tests of Significance

The relevance of the overall model and each individual variable was determined via parametric testing. ANOVA was used to do the F-test, which established the relevance of the overall model, and a t-test, which establish the coefficients significance.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

4.1 Introduction

This chapter presents the findings of this research. The main aim of the study was to determine how selected macroeconomic variables influences growth of the real estate sector in Kenya. The following sections consist of descriptive statistic, diagnostic test, analysis of correlations, regression and discussion of results.

4.2 Descriptive Analysis

Descriptive statistics of all variables on which analysis was done are listed in the table below. Quarterly information was gathered and analyzed using SPSS version 24 software during a ten-year period (2012 to 2021).

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Growth	40	.000	.123	.09628	.033283
Exchange rates	40	1.9	2.0	1.947	.0506
Interest rate	40	5.8330	18.0000	9.693650	2.8334653
Inflation	40	4.033	16.833	8.07400	3.606442
Unemployment rate	40	.092	.123	.10823	.008166
Valid N (listwise)	40				

Source: Research Findings (2022)

4.3 Diagnostic Tests

Diagnostic tests were done before even handling the regression model. Co-integration, Multicollinearity, normality, autocorrelation, and stationarity tests were conducted in the survey.

4.3.1 Stationarity Test

The research variables were subjected to a unit-root test to establish if the data was stationary. The unit root test was ADF test. With a standard statistical significance level of 5%, the test was compared to their corresponding p-values. In this test, the null hypothesis states that every variable has a unit root, and the alternative hypothesis is that the variables are stationary. Findings depicted in Table 4.2.

Table 4.2: Stationarity Test

	Critical value at 95%	DFT statistic	P-value
Growth	-2.447	-3.271	0.000
Exchange rates	-2.447	-3.337	0.000
Interest rate	-2.447	-4.748	0.000
Inflation	-2.447	-3.755	0.000
Unemployment rate	-2.447	-4.826	0.000

Source: Research Findings (2022)

As demonstrated in Table 4.2, this test concludes that the data is stationary at a 5% level of statistical significance since the p-values all fall below 0.05.

4.3.2 Co-integration Test

This test was done to establish if the explanatory variables show a long run or short run interrelationship. The results are as shown in Table 4.3

Table 4.3: Co-integration Test Results

	Eigen Value	Trace Statistic	Critical value at 95%	P-value
Exchange rates	0.123	23.13	26.03	0.000
Interest rate	0.083	61.02	62.07	0.000
Inflation	0.301	20.01	26.79	0.000
Unemployment rate	0.189	27.22	28.76	0.000

Source: Research Findings (2022)

The findings indicate all variables to be having a p value of less than 0.05 therefore establishing that variables show a long-run or short run relationship.

4.3.3 Normality Test

To establish if the data was normally distributed, the researcher used the Jarque-Bera tests. If the p-value falls above 0.05, we conclude that there is normal distribution of data and vice versa. Table 4.4 summarizes the results of the test.

Table 4.4: Normality Test Results

	Jarque-Bera Coefficient	P-value
Growth	3.586	0.101
Exchange rates	6.303	0.203
Interest rate	2.765	0.316
Inflation	3.152	0.228
Unemployment rate	4.144	0.202

Source: Research Findings (2022)

Since the data displayed a p value of above 0.05 therefore having a uniform distribution, the researcher adopted the alternative hypothesis. This data was fit to be subjected to tests and analysis like for variance, regression and Pearson's Correlation analyses.

4.3.4 Multicollinearity

In a multiple regression model, multicollinearity is displayed whenever predictor variables exhibit a substantial relationship. An event where independent variables have great correlations is unfortunate. Parameters are said to have multicollinearity if they have a perfect linear connection. Outcomes for the test on multicollinearity were displayed in Table 4.5.

Table 4.5: Collinearity Statistics

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

Source: Research Findings (2022)

VIF value is used where values that fall below 10 are not multi-linear. One condition for multiple regressions to occur is that no strong connection should be evidenced among variables. Given by the outcomes, every VIF variable is below 10 as indicated in table 4.5 which shows that independent variables in the study experience no significant statistical multi-linearity.

4.3.5 Autocorrelation

A serial correlation test established the relationship of error terms for different times. For the research to obtain the desired model parameters, the Durbin Watson serial correlation test was used to carry out the analysis of autocorrelation in the data, which is a major shortcoming in the data analysis that must be examined. The findings are shown in Table 4.6.

Table 4.6: Autocorrelation Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.725[a]	.526	.472	.024187	2.441

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

Source: Research Findings (2022)

From the null hypothesis, no first-order serial/auto correlation exists. The 2.441 Durbin Watson statistical varies from 1.5 to 2.5 indicating no serial correlation.

4.4 Correlation Analysis

Pearson correlation was employed to establish the relationship linking growth of the real estate sector in Kenya to the characteristics of the study (exchange rate, inflation, interest rate and rate of unemployment). The results are as shown in Table 4.7.

Table 4.7: Correlation Analysis

		Growth	Exchange rates	Interest rate	Inflation	Unemployment rate
Growth	Pearson Correlation	1				
	Sig. (2-tailed)					
Exchange rates	Pearson Correlation	-.468**	1			
	Sig. (2-tailed)	.002				
Interest rate	Pearson Correlation	.060	.179	1		
	Sig. (2-tailed)	.713	.270			
Inflation	Pearson Correlation	.282	-.269	-.304	1	
	Sig. (2-tailed)	.078	.093	.056		
Unemployment rate	Pearson Correlation	-.710**	.768**	.060	-.436**	1
	Sig. (2-tailed)	.000	.000	.713	.005	

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

Source: Research Findings (2022)

From the study's findings, a strong negative that is statistically significant relationship exists between exchange rate and growth of the real estate sector (r = -.468, p = .002). The correlation results further revealed a weak positive and not significant statistical connection between interest rate and growth of the real estate sector (r = .060, p = .713). Inflation exhibited a weak positive and not significant association with growth of the real estate sector in Kenya (r = .282, p = .078). The rate of unemployment displays a significant and negative interrelationship to growth of the real estate sector in the Kenyan economy (r = -.710, p = .000).

4.5 Regression Analysis

Exchange rates, interest rate, inflation, together with the rate of unemployment were utilized as agents to predict growth of the real estate sector in Kenya. The test was done at 5% level of significance. Table 4.8 to 4.10 displays the results.

Table 4.8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.725[a]	.526	.472	.024187	2.441

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

Source: Research Findings (2022)

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 0.526, indicating that changes in exchange rates, interest rate, inflation, and the unemployment rate account for 52.6 percent of the real estate sector's growth. Other factors not included in this research account for 47.4 percent of the variance in real estate sector growth in Kenya. The correlation coefficient (R) of 0.725 showed a significant connection amongst predictor factors and real estate sector growth.

Table 4.9: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.023	4	.006	9.712	.000[b]
	Residual	.020	35	.001		
	Total	.043	39			

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

Source: Research Findings (2022)

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 how exchange rate, rate of interest, inflation, and unemployment affect Kenya's growth of the real estate sector.

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 researcher to determine which independent variables were chosen (Exchange rate, economic growth, inflation and unemployment rate) significantly influences the growth of the real estate sector of the Kenyan economy. Table 4.10 summarizes the findings.

Table 4.10: Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.250	.181		3.380	.000
	Exchange rates	-.111	.125	-.169	-2.894	.003
	Interest rate	-.001	.001	-.074	-.583	.564
	Inflation	.000	.001	-.023	-.166	.869
	Unemployment rate	-.484	.024	-.455	-4.229	.000

a. Dependent Variable: Growth

Source: Research Findings (2022)

Table 4.10 shows that only exchange rate and unemployment rate, with a p value less than 0.05, were a significant predictor of real estate sector growth in Kenya. Other independent factors (interest rates, and inflation) were not significant 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:

$Y = 0.250 -0.111X_1 -0.484X_2$

Where,

Y = Growth of the real estate sector

X_1= Exchange rate

X_2= Unemployment rate

Using the constant = 0.250, we can see that if selected independent variables (exchange rates, interest rates inflations, and unemployment rates) were rated zero, the real estate sector industry would increase by 0.250. Increasing exchange rate by one unit would decrease growth by 0.111 units while increasing the unemployment rate by one unit would cause the real estate sector growth to decline by 0.485. The other variables considered had no statistically significant influence.

4.6 Discussion of Research Findings

This research had an aim of seeing the way in which the predictor variables impacted the growth of the real estate sector in the Kenyan context. Independent variables included exchange rate, interest rate, inflation together with unemployment rate. This research tried to show growth of the real estate sector being a dependent variable. The

Hass consult index measured growth of the real estate sector. Correlation as well as regression analysis were utilized to show the connection linking the independent to dependent variables.

The Pearson model showed a strong negative relationship that is statistically significant between exchange rate and growth of the real estate sector. The correlation results further revealed a weak positive and not significant statistical connection between interest rate and growth of the real estate sector. Inflation exhibited a weak positive and not significant association with growth of the real estate sector in Kenya. The rate of unemployment displays a significant and negative interrelationship to growth of the real estate sector in the Kenyan economy.

The independent variables accounted for 52.6% of variances in growth of the real estate sector, in accordance with the summary of the model. The predictor variables of this research had explanatory power that fitted a 95% confidence level like indicated by the 0.000 p value, that was way below the threshold of significance that is 5%. Therefore, the overall model employed in this study is a good and sufficient prediction model to determine the growth of the real estate sector in Kenya.

This research is in agreement with Baba and Nasieku (2019) who using explanatory research design examined how Nigerian banks financial performance is influenced by macroeconomic factors. The study utilized on secondary data gathered from banks annual reports, World Bank, Nigerian bureau of statistics and research centers. 23 licensed banks in Nigeria participated in this study. The study applied return on equity (ROE) as performance measurement. The empirical outcome indicated unemployment rate, exchange rates, and interest rates are inversely and substantial associated with the performance of banks whereas inflation has an insignificant

relationship. An increment in exchange rate positively influences the performance of banks while an increment in the interest rates worsens performance.

This study is on contrast with a study conducted by Ng'ang'a (2016) who using descriptive research approach undertook a study to examine association amongst macroeconomic determinants and performance of insurance industry in Kenya. The performance was regressed against the macroeconomic indicators; average interest rates as computed by Central Bank rate, real exchange rates, GDP growth rate, inflation rate was calculated by CPI and unemployment rate. It employed secondary data collected quarter yearly. The study was done in a ten-year period from 2006 to 2015. The data was analyzed through multiple, correlation and descriptive analyses. Findings reveal that exchange rates, interest rates, and unemployment rates are not significant predictors of insurance industry's performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The major motive of this study was to investigate the way selected macroeconomic variables influences the growth of the real estate sector in Kenya. The findings from the above sections are outlined in this chapter together with the conclusions and limitations of this study. This section also outlines the strategies that can be adopted by policymakers. It also carries the recommendations.

5.2 Summary of Findings

The study assessed how selected macroeconomic variables influenced the growth of the real estate sector in Kenya. Exchange rate, interest rates, inflation, as well as unemployment were adopted to be the predictor variables of the research. The study used descriptive design to do analysis and data collection. Secondary data was obtained from CBK as well as KNBS and prepared using SPSS version 24 program. The study used data of 10 years compiled quarterly.

The Pearson model showed a strong negative relationship that is statistically significant between exchange rate and growth of the real estate sector. The correlation results further revealed a weak positive and not significant statistical connection between interest rate and growth of the real estate sector. Inflation exhibited a weak positive and not significant association with growth of the real estate sector in Kenya. The rate of unemployment displays a significant and negative interrelationship to growth of the real estate sector in the Kenyan economy.

The independent variables accounted for 52.6% of variances in growth of the real estate sector, in accordance with the summary of the model. The predictor variables of

this research had explanatory power that fitted a 95% confidence level like indicated by the 0.000 p value that was way below the threshold of significance that is 5%. Therefore, the overall model employed in this study is a good and sufficient prediction model to determine the growth of the real estate sector in Kenya.

The regression results further discovered that if the selected independent variables (exchange rate, interest rate, inflation, and unemployment rates) were rated zero, the real estate sector industry would increase by 0.250. Increasing exchange rate by one unit would decrease growth by 0.111 units while increasing the unemployment rate by one unit would cause the real estate sector growth to decline by 0.485. The other variables considered had no statistically significant influence.

5.3 Conclusion

The results of the research indicate that Kenya's growth in the real estate sector is adversely affected by exchange rates and unemployment rate. The research finds that the higher exchange rates and unemployment rate leads to a significant decrease in growth in the real estate sector. The research also finds that while interest rate and inflation have an adverse impact on real estate sector growth, the impact is not statistically meaningful.

The study concludes that the factors under research – exchange rate, interest rate, inflation and the unemployment rate – affect growth of the real estate sector by describing 52.6% of the variations. This means that the non-model variables are only responsible for 47.4% of variations of growth of the real estate sector in the country. It is therefore substantial to infer that the outlined factors affect the growth of the real estate sector as shown in the ANOVA summary by p values less than 0.05.

The conclusions of this research concurred with Nderitu (2020) who aims to determine to what degree macro-economic factors influence Kenya's banking sector performance. The period from 2009 to 2018 included inferential and descriptive statistic to examine the data gathered. SPSS software version 22 was applied in analyzing data and the outcomes were displayed in tables and graphs. The findings show that interest rate and economic expansion have a favorable effect on business banking performance, whereas exchange rates and inflation has serious undesirable impact on success in the banking system.

5.4 Recommendations

Outcomes show that exchange rate possesses a negative and considerable effect on growth of the real estate sector in Kenya implying a rise in exchange rate can have an adverse effect on growth of the real estate sector. This also means that the real estate sector will expand if the exchange rates appreciate. The research proposes that policy makers to adopt measures aimed at stabilizing the exchange rate, since this would lead to development in the real estate sector and possibly also other areas of the economy.

This study has demonstrated that the rate of unemployment has a positive and significant effect on the growth of the real estate sector in the country. It therefore recommends that several approaches are required to make sure that the factors that lead to unemployment are well handled to make sure that the unemployment is regulated to enhance further growth of the real estate sector. When the country will be able to reduce the current unemployment rate, it will enhance its production which will lead to an increase in real estate growth.

This study also demonstrated that inflation impacts negatively on growth of the real estate sector. This implies that higher inflation is likely to reduce growth of the real

estate sector in the Kenyan economy. 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 growth of the real estate sector. The research suggests that interest rates be controlled since they influence the growth of the real estate sector.

5.5 Limitations of the Study

This study embraced a 10 years period (2012-2021). It gives no substantial evidence that in an added timeframe, the findings will not change. Additionally, it is not certain that these findings will be sustained after 2021, things might change. Extra timeframe is reliable because it comprises instances with economic shifts like recessions and booms.

The main drawback of the study was the quality of data. It is not possible to reliably state the results obtained in the survey as the correct reflection of the general situation. Accuracy and reliability of the data collected are assumed to a certain point. Additionally, because of the existing circumstances, computing the data has been incoherent. This study uses secondary data as opposed to primary data. The determinants of growth have been partially considered because of unavailability of data for all determinants.

Regression models were used to conduct data analysis. It would be impossible for the researchers to generalize outcomes because of the setbacks accruing from model utilization like erroneous and deceptive conclusions resulting from a change in value of variable. Whenever data is put in a regression model, it is impossible to process it through another previous model.

5.6 Suggestions for Further Research

The aim of the study was to determine the impact of selected macroeconomic variables on growth of the real estate sector of the Kenyan economy. A research that focuses on primary data or mixes primary data with secondary data is recommended so as to recognize qualitative elements that might have been overlooked in the current research.

This research failed to consider all independent variables that affect growth of the real estate sector of an economy. A suggestion therefore arises to include other factors in future studies in order to come up with more specific findings. These factors include money supply, balance of payments, corruption, cost of labour, and FDI. Providing details how each of them affects growth of the real estate sector will enable policymakers make decision on the steps to take in order to control their growth of the real estate sector.

Because of unavailability of data, this study focused on the latest 10 years. Other future studies should employ a wider range to come up with a valid conclusion. This study was also under restriction because it only focused solely on Kenya. Additional survey should be conducted in other nations to determine results. In conclusion, the investigator adopted a regression model to do a confirmation or rejection of the findings. Any studies in future should adopt other independent methods to confirm or reject their findings.

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APPENDICES

Appendix I: Data Collection Schedule

Year	Qr.	Hass Composite Index	Average bank lending rate	Inflation rate	Unemployment rate	Exchange rate

Appendix II: Research Data

Year	Quarter	Growth	Exchange rates	Interest rate	Inflation	Unemployment rate
2012	1	0.112	1.901	6.917	16.833	0.092
	2	0.107	1.895	6.750	15.920	0.094
	3	0.119	1.882	6.000	13.393	0.097
	4	0.123	1.876	6.000	10.300	0.098
2013	1	0.111	1.884	5.833	7.850	0.098
	2	0.114	1.897	6.083	5.867	0.099
	3	0.119	1.908	6.500	4.707	0.099
	4	0.122	1.906	15.167	4.033	0.100
2014	1	0.106	1.915	18.000	4.157	0.100
	2	0.107	1.935	18.000	6.013	0.103
	3	0.113	1.969	15.333	9.020	0.104
	4	0.117	1.973	11.667	12.777	0.104
2015	1	0.110	1.925	9.500	15.827	0.104
	2	0.107	1.925	8.833	16.290	0.105
	3	0.111	1.926	8.500	14.297	0.106
	4	0.114	1.932	8.500	10.697	0.106
2016	1	0.109	1.938	8.500	7.257	0.106
	2	0.108	1.927	8.500	5.043	0.106
	3	0.107	1.941	8.500	4.563	0.107
	4	0.105	1.934	8.500	5.387	0.107
2017	1	0.106	1.936	8.500	6.203	0.107
	2	0.106	1.941	9.000	6.827	0.107
	3	0.106		11.500	7.237	0.108

Year	Quarter	Growth	Exchange rates	Interest rate	Inflation	Unemployment rate
			1.946			
	4	0.104	1.954	11.500	6.977	0.109
2018	1	0.103	1.962	11.500	6.667	0.110
	2	0.104	1.982	10.833	6.657	0.111
	3	0.104	2.013	10.500	6.390	0.111
	4	0.099	2.010	10.500	6.437	0.112
2019	1	0.099	2.008	10.000	6.840	0.113
	2	0.100	2.004	10.000	6.590	0.114
	3	0.100	2.006	10.000	6.470	0.114
	4	0.094	2.007	10.000	6.403	0.116
2020	1	0.097	2.015	9.500	6.483	0.117
	2	0.098	2.014	9.000	7.723	0.118
	3	0.098	2.015	9.000	8.323	0.119
	4	0.092	2.014	9.000	8.153	0.119
2021	1	0.055	2.008	9.0000	7.360	0.121
	2	0.053	2.003	9.0000	5.683	0.122
	3	0.052	2.003	9.0000	4.703	0.123
	4	0.055	2.008	8.8300	4.603	0.123