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*Interest Rate Risk Management Practices and
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Interest Rate Risk Management Practices and Performance of Real Estate Construction Projects in Busia County, Kenya

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Abstract

Although Real estate Housing Industry Projects continue to gain popularity and awareness in Kenya and abroad, many Real Estate Housing Companies do not have effective financial risk management practice systems established. There are problems of lost time and increased costs that cannot be regained in Busia County occasioned by construction issues which are mostly experienced as a result of land disputes that prolong the completion time of most real estate construction projects in the County. Not unless such problems are addressed, the County will continue lagging behind in terms of performance of real estate construction projects. As such, there will be always a problem of prevalence and incessant abandonment of real estate construction projects creating serious financial risks that if effectively addressed would influence Real Estate Construction Projects Performance hence creating win –win situation for both the contractor and its customer. In this study, data was analyzed using descriptive and inferential statistics. Inferential statistics involved testing of research hypotheses using spearman correlation and regression analysis. The composite mean and composite deviation for the Interest rate risk management were 3.99 and 0.948 respectively; implying that using the Likert scale; the respondents agreed that Interest rate risk Influenced Performance of real estate construction projects in Busia County. The overall correlation coefficient for Interest rate risk management for and Performance of real estate construction projects in Busia County was found to be 0.649 with a p-value of $0.000 < \alpha=0.05$ implying that from the views of the participants in the study, the results indicated that there was a significant relationship between Interest rate risk management and Performance of real estate construction projects in Busia County, leading to rejection of the null hypothesis by concluding that there is a significant relationship between Interest rate risk management and Performance of real estate construction projects in Busia County. In conclusion, the simple linear regression coefficients result revealed that there was sufficient evidence that Interest rate risk management was linearly related to Performance of real estate construction projects in Busia County. The study recommends that, Since the banking sectors enjoy preferential treatment for interest income from banking sector fixed deposits, real estate construction projects, entrepreneurs should therefore seek for their project funding through bank fixed deposits since a fixed deposit in the bank incurs a final withholding tax of 15% compared to other instruments such commercial paper issued by a developer, which will incur a total tax of 30%. This difference in tax treatment then drive individuals to purchase bank fixed deposit papers compared to commercial papers or privately issued notes which will incur higher interest rates therefore making bank fixed deposits affordable for housing development.

Keywords: Interest Rate Risk Management Practices, Performance of Real Estate Construction Projects

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Introduction

The real estate sector has immensely contributed to the development and progress of many economies in the world and is often considered as the leading indicator of the economic health of any economy. Real estate refers to any physical property or improvements affixed to the land and other developments on it including land itself. Real estate property development is a multifaceted business, encompassing activities that range from the renovation and release of existing buildings to the purchase of raw land and the sale of improved land or parcels to others for a profit (Ajello, Andrea, Thomas, David and Taisuke, 2015). International Monetary Fund (IMF), (2015) argues that real estate investment plays a crucial role in providing job opportunities, sheltering households, enhancing income distribution and alleviating poverty. Moreover, since real estate construction industry is seen as the most significant industry in any economy there is need to prioritize address of a myriad of risks that may lead to huge financial losses right at the initial stage of the projects or else they will impact on the successful completion of these projects within time, budget, in accordance with specification and satisfaction of stakeholders (Nguyen, Ogunlana and Lan, 2017).

Globally, real estate development has played a profound role in growing the economies of nations over time. For instance, organized real estate in USA and Canada is almost as old as the countries themselves (Svensson, 2019). As it is today, more than half of the world's population lives in urban centers and more than one third of them live in slums and is expected to further increase by over one billion in a decade. Slums are expected to grow at an accelerated pace unless 35million housing units are made available annually to accommodate the fast growing population (UN-Habitat, 2019). Address of planning risk has taken a centre stage in the USA real estate projects and must be done concurrently with engineering, construction, and other project plans (Bank for International Settlements, 2014). This statement was further supported by Dynan (2016) who argues that poor planning cost USA between 20-60% of the real estate investment because of reworks and eventual poor performance during the recession periods of 2008.

With the rapid development of national economy in recent years, real estate industry has also begun to develop rapidly and is showing a good momentum of development. However, the risk of real estate investment has further increased higher and higher. Therefore, decisions about the real estate project investment should predict the risk accurately but not only consider the benefits because the benefits and risks exist at the same time since the greater the benefit, the greater the corresponding risk. This has made

most domestic and foreign scholars and economists develop concern about this problem.(Bonnet, Bono, Chapelle and Wasmer ., 2019) point out that deterioration in real estate markets across large parts of Europe since 2007/2008 clearly demonstrate the significance of the real estate industry for the world economy clearly showing the impact of the financial crisis.

Research Problem

According to Bonnet *et al.* (2019), majority of property sectors in the USA have resulted insignificantly to reduced real estate valuations due to financial crisis preceded by failures in the sub-prime mortgage market that manifested itself in the USA in early 2007. As demonstrated in the context of the fallout from Greece, Significant problems in the Eurozone as well as concerns about sovereign debt actually dominated the European capital markets in 2012. The impacts of the crisis have been back from investment banks to commercial banks entailing a back-to-basics approach for European real estate commercial lending going forward as seen from the lending paradigm which shows greater awareness of risk and risk management in real estate development. Consequently, lenders have become extremely aware of providing debt leading in this tight capital markets. For this reason, real estate development organizations will have to demonstrate strong risk management practice not to be shut out of the access to equity or debt sources. On a long term, the global financial crisis may likely act as a catalyst to a change of the mentality of real estate development organizations making a risk management culture more entrenched in the industry (Stein, 2018).

As estimated by UN-Habitat (2018), by 2050 the population of the world will increase to two billion and 60% of them will live in urban areas. When viewed upon the development in terms of construction, there is evidence that cities, all over the continent, are rapidly growing. Reflecting back by 1950 only two African cities had a population of more than one million in comparison to 48 cities today. African cities are growing rapidly in terms of development as evident in Kampala, Uganda, which is one of the fastest growing cities in Africa and it has taken all directional growth during the last two decades. As such the urbanization process of Uganda has been clogged by a number of challenges for example in Kampala there is a problem of inadequate infrastructure and expansion of slum areas are now covering at least 21% of the city area (Vermeiren, 2019). However, this growth has also contributed to opportunities for the real estate construction sector as the number of construction projects are increasing in the capital. These opportunities have contributed to a booming construction industry making it, after agriculture, the second largest

employer and a major contributor to the economic recovery of the country attracting both domestic and international companies (Otim, Alinaitwe, Tindiwensi and Kerali, 2018).

Real estate investment in Kenya has done very well in terms of provision of employment opportunities, offering shelter to households, enhancing income distribution and alleviating poverty although it has continued to fail to fulfill this fundamental role due to a number of unique factors that affect investment in the sector. First, interest rate increase reduced the growth of real household credit by 40% in early 1990s resulting to increase in house prices in Kenya and the ratio of household debt to GDP consequently affecting performance in this sector (IMF, 2016). International Monetary Fund (IMF), (2016) asserts that, in the recent past, Kenya has witnessed an upsurge in real estate investment because of reduced mortgage loans rate. This is strongly associated with a slowdown in real house prices and driven by a number of factors notably the quest for Kenyans to own homes, rural urban migration, increased diaspora remittances among others (Nzalu, 2017). Kenyan real estate property encompasses single and multi-family residential dwellings, commercial and agricultural land, office space, go-dawns and warehouses, retail outlets and shopping complexes (Lynn, 2018). Real estate is seen as an asset with limited liquidity in relation to other investment. Apart from being capital intensive, it is highly cash flow dependent so if the factors affecting the growth in the investment are not well understood and managed by an investor, real estate becomes a risky investment. It is against this background that the researcher will carry out a study on influence of interest rate risk management practices on performance of real estate construction projects in Kenya focusing mainly to real estate construction projects in Busia County.

Objective of the Study

To establish the extent to which Interest Rate Risk Management influences Performance of Real Estate Construction Projects in Busia County, Kenya.

Research Hypothesis

H₀: There is no significant relationship between Interest rate Risk Management and Performance of Real Estate Construction Projects in Busia County, Kenya.

Literature Review

Interest rate risk Management

Interest rate plays a very central role as far as development and performance of real estate construction projects are concerned. A study conducted in Slovenia in 2017 on Analysis of Impact Factors on the Real Estate Market performance showed that Banks were satisfied, because investors hired credits at high interest rates for a longer period (Lee, Chin., and Lin, 2018). The methodological approach employed during the study was survey. The objective of the study was to investigate the effect of interest rate on real estate development in Slovenia. In this case a cross-sectional survey research design was employed with a target population of 2010 real estate firms and a sample of 201 real estate firms was selected and administered with structured questionnaires. Collected data was coded and analyzed for descriptive and inferential analyses using SPSS.

The study findings showed that there was a positive correlation among declining interest rates, higher prices and growing real estate transactions and the purchasing of a real estate property represents a better financial investment in the long term than any other investment, thus also offering protection against inflation. The same study showed no positive correlation among higher loan volumes and real estate values. These findings were closely related to Ciurlia and Gheno (2019) study who found that the very high interest rates scared investors from borrowing loans therefore scaring off many real estate development loan seekers from taking bank loans consequently reducing the rate of performance of the sector in terms of development of new units and sale of the already developed ones. On the other hand, Hinkelmann and Swidler (2018) point out that declining interest rates and growing inflation have an influence on rising real estate transactions, and vice versa. The methodological approach employed during the study was survey. In this case a cross-sectional survey research design was employed with a target population of 250 real estate firms and a sample of 25 real estate firms was selected and administered with structured questionnaires. Collected data was coded and analyzed for descriptive and inferential analyses using SPSS.

In another study conducted in the US by Martha and Edward (2018) on Global Asset Management and the impact of rising interest rate on real estate projects performance found that continuous rise in interest rates causes a lot of worry to real estate developers as their worry stood in the perception that rising interest rates will continuously weaken property values and real estate investment performance. The objective of the study was to investigate on how continuous rise in interest rate affect real estate project performance.

According to the study, continuous rise in interest rates has motivated considerable discussion among real estate professionals. More specifically, investors are worried about the impact of rising interest rates on property capitation (cap) rates and valuations. Cap rate is defined as the ratio of a property's net operating income (NOI) to market value, similar to an inverse price-to-earnings (P/E) ratio. Investors' concerns tend to focus on the arithmetic, implying that rising interest rates lead to increasing cap rates and, all else equal, declining property values. This study was supported by Martha (2019) argument which pointed out that past statistics shows that higher interest rates have not necessarily misguided real estate total return performance but property performance has often remained resilient in the face of rising rates.

Martha and Pierzak (2016), in their study "Winning Markets: Persistence in Target Market Portfolio Performance," in *Global Real Estate* found that cap rates are influenced by an expansive network of variables beyond interest rates, bringing on board real estate fundamentals, capital flows and investor risk appetite. The impact of rising interest rates therefore makes it difficult to predict real estate performance. Indeed, the overview for real estate in a rising rate environment depends on a myriad of factors specific to the current and expected economic and property market environments. The methodological approach employed during the study was survey. In this case a cross-sectional survey research design was employed with a target population of 460 real estate firms and a sample of 46 real estate firms was selected and administered with structured questionnaires.

Performance of Real Estate Construction Projects

The demand for real estate construction projects has played a major role in its performance all over the world since it defines its rate of turn over. In a study carried out in Europe by the European commission (2018) on influence of demand on real estate construction projects performance, the study found that increased demand for real estate construction projects increases its performance while decreased demand decreases its performance as witnessed in 2008 recession period. According to the study, high circulation of income within the economy influences housing demand, hence influencing real estate construction project performance.

Moreover, Sanders (2019) in a study carried out in Pakistan to evaluate factors influencing performance of real estate construction projects defined quality of construction projects as performance to standards or value paid for the price. According to the study, adopting quality production measures in real estate

construction projects has significantly contributed to positive impact on project success as project staff is able to identify and take measures to mitigate occurrence of risks to a greater extent. Moreover, observation of quality production of real estate construction projects, utility of risk management strategies and deeply understanding the business area are critical success factors and had a significant impact on project performance. This is seen from clients' increasing use of companies' good image and continuous improvement service for good quality work as a basis for selecting prospective Project Quality Performance in Developing Countries for customer satisfaction.

Safety in the working place is a complex phenomenon, and the subject of safety feelings and safety influences performance of real estate construction industry to a greater extent all over the world. In a study conducted in Nepal to investigate risk management in real estate construction projects, the construction industry was found to be bearing five times more fatalities than the manufacturing industry (Himalayan News Service, 2016). According to the study, lack of project safety negatively affects the project time, cost or quality hence influencing its general performance. Moreover, in a study conducted in Switzerland on Risk Management of Small Real Estate Management Firms project performance (European commission, 2018) found that increase on price of land in the cities and consequently the price of housing in real estate made more people invest their money in real estate. Consequently, many houses were developed to an extent that some houses were left unoccupied due to poor quality work that informed lack of safety during their development hence affecting performance of this projects.

The study further argues that overdevelopment and lack of safety of real estate construction projects are the main cause of poor performance in this sector. Finally in a study conducted on influence of innovative strategy practices on project team effectiveness in real estate construction firms' performance in Kenya, Muhoma and Kwasira (2016) found that Real estate development was a multifaceted business, growing rapidly across urban areas. The objective of the study was to investigate on how project development strategy influences real estate development performance. A strong positive correlation was found between all the four strategies namely; communication planning, technology adoption, project leadership and team cohesion all influencing real estate construction project performance.

Interest Rate Risk Management and Performance of Real Estate Construction Projects

Interest rates have played a major role in the distribution of net housing capital income in real estate projects. Higher nominal interest rates have an adverse impact on corporate profitability and hence corporate savings and investment during the affected period (Government of India, 2013). The regular lowering of nominal interest rates lowers the cost of owning a home and so effectively increases the demand for housing for credit-constrained households (Ellis, 2015) hence influencing real estate construction projects performance. Consequently, lower interest rates reduce the debt servicing costs of indebted home owners and increase net profits although an indirect effect on lower interest rates push up land prices, hence influencing real estate construction project performance. In this case the two channels reinforce each other such that existing home owners will typically take a greater share of aggregate income as interest rates fall (Poterba 1984; Díaz and Luengo-Prado 2018).

When there is an increase in housing demand, there will be higher relative prices for land in areas that are constrained in terms of new housing supply. The rise in the relative price of land, in turn, leads to an increase in the (nominal) share of spending on housing. Given that housing supply constraints are typically most prevalent in the largest US cities, they contributed disproportionately to total spending on housing (and income accruing to the owners of housing) in the overall economy. During this period, corporate savings fall while corporate investments fall even more as a result it influences the performance of real estate construction implemented projects. With increased interest rate, the borrowing requirements are heightened leading to some crowding out of the private sectors (Panos, Rong, and Qing, 2019).

In the study conducted by Waseem (2018) in Pakistan to explore Impact of Interest Rate Changes on the Profitability of Major Commercial Banks in Pakistan, the results generally indicated that there is a negative correlation between nominal mortgage interest rates and the share of housing income. The objective of the study was to explore the impact of interest rate changes on the profitability of commercial Banks in Pakistan. The methodological approach employed during the study was survey. The target population was 120 commercial banks. A sample of 30 commercial Banks was administered with questionnaires. The data Collected was coded and analyzed for descriptive and inferential analyses using SPSS. The study found that the coming down of interest rates is associated with net profits to home owners rising by 1.3 % to 21% on average as lower interest rates contribute to more income being spent on housing. Contrastingly, there was some tentative truth that reduced interest rates are associated with lower net profits for landlords and

that the user cost model points to a positive relationship between interest rates and the rental yield, which is suggestive of the user cost model being more applicable in practice to landlords than to home owners (Carrillo, Early and Olsen, 2018). The outcome is in relation with the hypothesis that interest rates have a higher effect on the housing capital income share in supply-constrained areas. The study findings were closely related to (Bonnet., Bono., Chapelle and Wasmer, 2018) study which showed that when interest rates fall, on average, at an annual rate of 17%, of the share of housing capital, income rise by 7.4% on average, over the sample period.

Perhaps the most interesting part of these results is the fact that there is a negative correlation between mortgage interest rates and housing capital available for disposal. Moreover, the study findings were similar to Andrews, Caldera, and Johansson (2020) study which showed that increase in housing's share capital of the US economy showed a combination of reduced interest rates and increased demand in housing supply. In comparison to across similar model specifications, there is some truth that the relationship between interest rates and the share of owner-occupier profits is economically larger than the same correlation between interest rates and the share of housing capital income. In terms of house pricing, the study found that the regular changes in prices of houses were affected by the price elasticity of housing supply.

Areas with low housing supply, experience high house prices due to increased rate of demand compared to areas with high supply responsiveness (Andrews *et al.*, 2020). The consequence of high supply activity of real estate construction projects or overbuilding increases the risk of getting a reasonable gain since it might activate a fall in housing prices if demand subsequently comes down (Glaeser, Gyourko, and Saiz, 2018). Supply reactivity of houses tends to vary across geographical areas, which depends on physical and government regulations. For example, it is estimated by Caldera, Sánchez, and Andrews (2019) that long-run price elasticity of new housing supplies in OECD countries vary between 0.146% and 2.014%.

Universally, the drawback effect of interest rates is stronger in the supply-constrained states and this negative effect reflects a combination of both real interest rates and inflation (Davis and Ortalo-Magné (2020). In the model with the federal funds rate for example, the coefficient estimated at -0.210% for owner-occupier profits and -0.082% for housing capital income gives a clear picture that lower interest rates affect net housing income through two ways: through their indirect effect on housing demand and their direct effect on debt-servicing costs.

The coefficient estimate on forecasted housing capital gains is, in general on a negative dimension; this is consistent with the user cost of capital model. The coefficient estimates on the other control variables are somewhat surprising. Although, we would expect higher GDP and population growth to be associated with higher housing demand, and hence a greater share of the state economy going to the housing sector. The estimates in general have been found to point to the opposite, with both growth in real GDP and the population being negatively correlated with the share of income going to housing. With the fall in the interest rate and no change wage rate, there will be tendency throughout the economy to substitute the cheaper input, capital, for the more expensive input, labour, in the production of the constant level of output hence influencing real estate construction project performance (Hansen, 2019). Although such tendency will present throughout the economy, the extent to which substitution of this sort actually takes place will vary widely from industry to industry and, to a lesser extent firm to firm within a particular industry hence affecting industrial performance at its operational level.

A study conducted in Slovenia on Analysis of Impact Factors on the Real Estate Market performance showed that Banks were satisfied, because investors hired credits at high interest rates for a longer period (Lee, Chin, and Lin, 2018). However, Ciurlia and Gheno (2019) argue that the very high interest rates scared investors from borrowing loans therefore scaring off many real estate development loan seekers from taking bank loans consequently reducing the rate of performance of the sector in terms of development of new units and sale of the already developed ones. On the other hand, Hinkelmann, and Swidler (2018) point out that the coming down of interest rates and persistent increase in price level have an influence on rising real estate transactions, and vice versa. The methodological approach employed during the study was survey. In this case a cross-sectional survey research design was employed with a target population of 250 real estate firms and a sample of 63 real estate firms was selected and administered with structured questionnaires. Collected data was coded and analyzed for descriptive and inferential analyses using SPSS. The study findings showed that declining interest rates, higher prices and growing real estate transactions and the purchasing of a real estate property had a positive correlation and this represents a better financial investment in the long term than any other investment, thus also offering protection against inflation. The same study showed no positive correlation among higher loan volumes and real estate values.

In another study conducted in the US on Global Asset Management and the impact of rising interest rate on real estate projects performance, found that continuous rise in interest rates causes a lot of worry to real estate developers as their worry was grounded in the fact that rising interest rates will bring down property values and real estate investment performance (Martha and Edward, 2018). According to the study, the rising interest rate has stirred considerable discussion among real estate professionals. Investors' fears mathematically tend to focus on the fact that, rising interest rates result in increasing cap rates and, all else equal, declining property values. This was supported by Martha (2019) argument which pointed out that historically, higher interest rates have not necessarily derailed real estate total return performance but it has demined real estate development.

In fact, according to the study, property performance has often remained resilient in the face of rising rates. Martha and Edward (2018), in their study "Winning Markets: Persistence in Target Market Portfolio Performance," in Global Real Estate found that cap rates are influenced by a wider network of variables beyond interest rates, including real estate fundamentals, capital flows and investor risk appetite therefore making it difficult to predict the impact of rising interest rates on real estate performance. Indeed, the total outlook for real estate growth rate depends on a variety of factors specific to the current and expected economic and property market environments. The methodological approach employed during the study was survey. In this case a cross-sectional survey research design was employed with a target population of 460 real estate firms and a sample of 115 real estate firms was selected and administered with structured questionnaires.

In a study conducted in Nigeria to investigate influence of interest rate risk on Deposit Money Banks in Nigeria, Kolapo and Fapetu (2019) found that interest rate risk weakly determines changes in returns on assets. According to the study, interest rate risk had insignificant effect on bank performance. The objective of the study was to investigate influence of interest rate risk on performance of Deposit Money Banks (DMB) in Nigeria. The study made inquiry into the influence of interest rate risk on the performance of DMBs in Nigeria between 2002 and 2011, using a sample consisting of 6 tier 1 capital banks. The regression model used specified return on assets and measured bank performance as a function of interest rate of risk indexed with loans to asset ratio, average lending ratio, and risk of interest diversity. The study employed fixed effect regression method with each measure of interest rate found to have insignificant effect on bank performance. This finding was in contrast with, Ciurlia and Gheno (2019) study which found that the very

high interest rates scared investors from borrowing loans therefore scaring off many real estate development loan seekers from taking bank loans but closely related to Martha (2019) argument which pointed out that historical data shows that higher interest rates have not necessarily derailed real estate total return performance.

In a study conducted in Kenya to investigate influence of interest rate determinants on the performance of commercial banks in Kenya, Maigua and Mouni (2016) found that interest rate are the major economic factors that influence the economic growth in an economy. According to Maigua and Mouni (2016), interest rates can be used to control persistent increase in price level and to boost economic development. This argument was closely related to, Hinkelmann, and Swidler (2018) study which pointed out that the weakening interest rates and rising inflation have an influence on rising real estate transactions, and vice versa. The interest rates determinants that were studied are Inflation Rates, discount rates, Exchange Rate and reserve requirement to determine the influence they have on performance of banks. The target population of the study was 43 commercial banks operating in Kenya. The sample size for the study was 26 commercial banks obtained from the population and data analysis technique applied in the study was multiple regression analysis. The study found that discount rates, inflation and exchange rates had positive influence on performance of commercial banks and higher levels of reserve requirement ratio result in lower bank performance in Kenya.

Research Methodology

Data was analyzed using descriptive and inferential statistics. Descriptive statistics involved quantitative and qualitative data analysis therefore it used measures of central tendencies such as frequency, percentage, and mean standard deviation, composite mean and composite standard deviation. While inferential statistics involved testing of research hypotheses using spearman correlation and regression analysis. The descriptive research design used in this study helped to explore the link between independent, moderating, and dependent variables. The target population for this study was 166 Real Estate entrepreneurs who have already developed housing units in Busia County; 1664 tenants who currently occupy some of the units; two managers - one from Kenya National Bureau of Statistics (KNBS) and another one from Ministry of Housing (MoH). This gave a total target Population of 1832 participants.

The sample size for this study was 298 tenants and 30 real estate entrepreneurs totaling to 328 drawn from a target population of 1664 tenants and 166 real estate entrepreneurs respectively using Yamane (1967) formula $n = \frac{N}{1+N(e)^2}$. In addition key two personnel officers in charge having prerequisite experience in real estate development – one from KNBS and one from MoH Busia County were also included in the study. According to Yamane (1967), the decision about the sample size depends on a number of considerations and there is no one definitive answer, although this is mostly affected by considerations of time, size of the population, cost and the problem of non-response. Since the population for the study is 1832 which is considered large enough for the application of Yamane formula, the sample size of tenants and real estate entrepreneurs was appropriately determined at 95% confidence level (p = 0.05).

Results and Discussions

Questionnaire Return Rate

Out of the 328 questionnaires administered to the participants in the Real Estate construction projects in Busia County, 320 were dully filled giving a return rate of 97.56%. The questionnaire return rate results are presented in Table one below.

Table 1: Questionnaire Return Rate

Participants	Sampled	Returned	Return Rate%
Real Estate construction projects participants (Tenants and real estate entrepreneurs)	328	320	97.56

The high return rate was attained because the researcher consistently followed up all the sampled respondents during data collection. The high return rate of 97.56% facilitated gathering of sufficient data that could be generalized to determine the influence of credit risk management practices, on Performance of Real Estate construction projects in Busia County. The Questionnaire return rate was considered adequate as per Mugenda and Mugenda (2003) and Kothari (2004) who recommended that a Questionnaire return rate beyond 50% is acceptable in research and subsequently satisfactory and contributes towards gathering of sufficient data that could be generalized to represent the opinions of participants about the study problem in the target population.

Demographic characteristics of the Respondents

In order to understand the characteristics of participants the researcher was dealing with in the study, their background information was necessary. The study sought information from the participants on distribution by; gender, age, educational level and length of experience. The participants were asked to provide the demographic information. The results are presented and are further discussed in the following subsequent sub themes.

Distribution of respondents by Gender

It was imperative to investigate the respondents' gender to establish gender parity in management of Real Estate construction projects in Busia County. The information sought on gender was significance to the government for policy decision making. The respondents were therefore asked to state their gender and the results are presented in Table two below.

Table 1: Distribution of Respondents by Gender

Gender	Frequency	Percent
Males	188	58.8
Females	132	41.2
Total	320	100

Table two above, shows that over 50% of the respondents totaling to 188(58.8%) were males while their female counterparts were 132(41.2%). The findings indicated that male real estate construction projects participants outnumbered their female counterparts, implying that there was still gender parity in Real Estate construction projects. The implication of this result to the study is that majority of men devote their time and get preoccupied in Real Estate construction projects to generate income for self-sustainability and hence enhance performance of Real Estate construction projects.

Distribution of the Respondents by Age

Research participants were also asked to provide their age to ascertain whether they were distributed normally in terms of age group. Age representation across the age brackets were used to ensure that the results represent views across all the age groups. The findings were analyzed to show respondents' distribution by age category in terms of frequency and percentage as provided in Table three.

Table 2: Distribution of Respondents by Age Group

Age group	Frequency	Percent	Cumulative %
Below 20 years	2	0.60	0.60
20-30 years	65	20.31	20.91
31-40 years	159	49.69	70.60
41-50 years	94	29.40	100.00
Total	320	100	

Table three above, indicates that 159(49.69%) of the participants were aged between 31 and 40 years, 94(29.4%) were aged between 41 -50 years, 65(20.1%) were aged between 20-30 years and 2(0.6%) were aged below 20 years. The findings on age distribution revealed that a majority totaling to 253(79.09%) of the respondents were above 30 years, compared to a minority 67(20.91%) aged 30 years and below. The implication of this finding to the study is that majority of the Real Estate construction projects participants were relatively mature enough and had prerequisite experience pertaining interest rate risk management Practices and performance of Real Estate construction projects in Busia County and hence would have an impact positively on performance of Real Estate construction projects in Busia County, Kenya.

Distribution of respondents by level of Education

The respondents were also asked to indicate their level of education. The level of Education of the respondent was significant in providing knowledge for understanding the influence of interest rate risk management Practices and performance of Real Estate construction projects in Busia County, Kenya. Table four below provides the respondents’ distribution by level of education.

Table 4: Distribution of Respondents by level of Education

Level of Education	Frequency	Percent
O-level	4	1.25
Bachelor degree	198	61.88
Post graduate	96	30.00
Others	22	6.87
Total	320	100

The study findings indicated that 198(61.88%) of the respondents had Bachelor degree level of education, 96(30%) had post graduate level of education, 22(6.87) had other level of education and finally 4(1.25%) had O- level of education. The implication of this findings to the study is that majority totaling to 294(91.88%) of the participants had degree certificate, secondary level of education and hence were knowledgeable enough to provide the study with reliable information on the interest rate risk management

Practices and performance of Real Estate construction projects in Busia County and hence would have an impact positively on performance of Real Estate construction projects in Busia County, Kenya.

Distribution of the Respondents by number of years in the Profession

Research participants were also asked to provide the number of years they have been in the Profession. The number of years of the participants in the organization was sought to establish whether they had the prerequisite experience in interest rate risk management practices and their influence on performance of Real Estate construction projects in Busia County. The findings were analyzed to show respondents’ distribution by number of years in the organization in terms of frequency and percentage as provided in Table five below.

Table 5: Distribution of Respondents by number of years in the Profession

Length of time in profession	Frequency	Cumulative frequency	Percentage	Cumulative Percent
Less than up to 5 years	48	48	15	15
5-10 years	220	268	68.8	83.8
11-15 years	45	313	14.1	97.9
Over 16 years	7	320	2.1	100
Total	320		100	

Table five above, indicates that 220(68.8%) of the respondents had been in the profession for a period between 5 to 10 years, 48(15%) of the respondents had been in the profession for a period less than up to 5years, 45(14.1%) of the respondents had been in the profession for a period between 11 to 15 years and 7(2.1%) of the respondents had been in the profession for a period 16 years and above. This findings indicates that 272(85%) of the participants had been in their respective professions for at least 5 years. The implication of this findings to the study is that majority of the respondents have been involved in interest rate risk management Practices decision making of Real Estate construction projects in Busia County for a considerable number of years and hence had the necessary prerequisite background information in matters to do with interest rate risk management practices decision making of Real Estate construction projects in Busia County.

Basic Tests for Statistical Assumptions of Regression Analysis

The study was based on a set of assumptions that must be met to ensure the data collected is appropriate for the statistical analysis. When these assumptions are violated; the results of the analysis can be erroneous. The assumptions include normality, linearity, multi-collinearity and test for independent of errors.

Assumptions of Normality

An assessment of the normality of data is a prerequisite for many statistical tests because normal data is an underlying assumption in parametric testing. The test for normality of data distribution was conducted on all the predictor variables, moderating variables and dependent variable using Kolmogorov-Smirnov test statistics (KS-test) and Shapiro-Wilk test (SW-test). The Kolmogorov-Smirnov test statistics (KS-test) and Shapiro-Wilk test (SW-test) test for normality results are presented in Table six below.

Table 6: Tests for Normality for Financial risk management strategies Project environmental factors

Tests of Normality			Kolmogorov-Smirnov ^a			Shapiro-Wilk		
Financial management strategies, environmental factors	risk Project	risk	Statistic	Df	Sig.	Statistic	Df	Sig.
Interest rate management	risk	risk	0.201	319	0.196*	0.906	319	0.189

a*lower bound of the true significance

The results of Kolmogorov-Smirnov test statistics and Shapiro- Wilk Test shown in Table six indicates that in all the responses tapped on the Likert scale for the independent and moderating variables under investigation (Interest rate risk management ; p-value =0.196>0.05), The P-value is more than 0.05; and hence it was concluded that the samples were picked from a normal population. In this study, all the SW-test statistics were approaching 1 and >0.05 for the variables under study (Interest rate risk management; SW-test statistics=0.189), and hence it was concluded that the samples were picked from a normal population.

Linearity Test of Assumption

Prior to conducting linear regression, a linear relationship ought to exist between the dependent and independent variables (Tabachnick & Fidell, 2017). ANOVA test for linearity was done to establish if

significant deviation from linearity was greater than 0.05 or not in order for the relationship between the independent variable to be confirmed as linearly dependent and admissible. The results are as shown in Table seven below.

Table 7: Linearity Test for Financial risk management strategies Project environmental factors

Financial risk management practices Project environmental factors	N	Linearity
Interest rate risk management	320	0.649

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

From the results in Table 7, all the correlation values of the financial risk management practices, and Project environmental factors indicated a positive degree of linear relationship with Performance of Real estate construction projects. (Interest rate risk management, $r=0.649$; $P\text{-value}=0.000<0.05$), and hence it was concluded that there was a statistically significant linear relationship ($P\text{-values} < 0.05$) between interest rate risks and Performance of Real estate construction projects. The significance of this finding to the study is that as interest rate risk management practices are adhered to Performance of Real estate construction projects is enhanced.

Performance of Real Estate Construction Projects

Performance of Real Estate Construction Projects in this study was the dependent variable. Both theoretical and empirical review in this study showed that number of occupied housing units, Rate of return on project investment, Demand and supply of housing units, Number of Housing units available, Number of unoccupied housing units are key indicators of Performance of Real Estate Construction Projects. Data was collected to measure ten indicators of Performance of Real Estate Construction Projects. The participants were therefore requested to respond to the Items in the Likert scale of 1-5 where strongly agree (SA) =5, Agree (A) =4, Neutral (N) =3, Disagree (D) =2 and Strongly disagree (SD) =1. The results were analyzed and presented using frequencies, percentages, means and standard deviations for each response in each item. The item mean as well as the standard deviation were also computed and presented alongside as provided in table form.

Interest rate Risk Management and Performance of Real Estate Construction Projects

Interest rate Risk in this study is defined as the process of controlling the dangers the banks are likely to experience when addressing the challenge of repayment of their finance that had been credited to real estate construction project firms. This was the third objective that the study sought to achieve; therefore, the participants were requested to give their opinions on their level of agreements or disagreements with the ten statements of Interest rate risk on a Likert scale of 1-5 where Strongly agree(SA)=5, Agree(A)=4 Neutral(N)=3, Disagree(D)=2 and Strongly disagree. (SD)=1. The results were analyzed and presented using frequencies, percentages, means and standard deviations for each response in each item.

Regression Analysis of Interest rate risk Management and Performance of real estate construction projects

Simple linear regression was adopted to investigate how interest rate risk influences performance of real estate construction projects. It was necessary to get the views of the participants on the influence interest rate risk and performance of real estate construction projects.

The rational of using the simple regression model was to establish how interest rate risk as a predictor significantly or insignificantly predicted the performance of real estate construction projects. These are further discussed in the subsequent sub-themes.

The model summary sought to establish how interest rate risk is a predictor that significantly or insignificantly predicted the performance of real estate construction projects. The model summary is presented in Table 8 below.

Table 8: Regression Model Summary table of Interest rate risk and Performance of real estate construction projects

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.649 ^a	0.422	0.420	0.544

a. Predictors: (Constant), **interest rate risk**

The model summary Table eight above indicated that there is a positive correlation ($R=0.649$) between interest rate risk and Performance of real estate construction projects and those predicted by the regression model. In addition, 42.2% of the variation in the Performance of real estate construction projects was explained by Interest rate risk.

The study sought to establish if the regression for ANOVA model was best fit for predicting Performance of real estate construction projects after use of Interest rate risk. The regression ANOVA results are presented in Table nine below.

Table 9: An ANOVA of the Regression of Interest rate risk and Performance of real estate construction projects

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	68.705	1	68.705	231.934	0.000 ^b
	Residual	94.201	318	0.296		
	Total	162.906	319			

a. Dependent Variable: Performance of real estate construction projects

b. Predictors: (Constant), interest rate risk

The ANOVA results indicated that (F-statistics (1,319) =231.934 is significant at P value $0.000 < 0.05$ implying that the predictor co-efficient is at least not equal to zero and hence the regression model results is significantly better predictor of Performance of real estate construction projects.

Table 10: Coefficients for the Regression of Interest rate risk and Performance of real estate construction projects

Coefficients ^a		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	1.074	0.191		5.626	0.000
	Interest rate risk	0.717	0.047	0.649	15.23	0.000

The study sought to establish whether there was influence of interest rate risk and Performance of real estate construction projects. The regression coefficients results are in Table ten above. The simple linear regression coefficients result indicated that there was significant influence of interest rate risk on Performance of real estate construction projects. The unstandardized coefficient of the constant term ($\beta_0 = 1.074$; $p < 0.05$) and interest rate risk ($\beta_3 = 0.649$; $p < 0.05$) were statistically significant. Using the standardized beta value (0.476), interest rate risk stood as the fourth best predictor among other predictor variables in predicting Performance of real estate construction projects. The regression model for interest rate risk was $y = 1.074 + 0.649X_3$ implying that for each unit of interest rate risk, Performance of real estate construction projects marginally changed by 0.649 units. It was therefore concluded that interest rate risk on Performance of real estate construction projects were positively and linearly related.

Conclusions and Recommendations

The research objective was to examine the extent to which Interest rate risk management influences Performance of real estate construction projects in Busia County. The simple linear regression coefficients as well as the Pearson correlation results indicated that there was significant influence of Interest rate risk management on Performance of real estate construction projects in Busia County. The small p-values; implied that there was a significant influence of Interest rate risk management on Performance of real estate construction projects in Busia County.

Since the banking sectors enjoy preferential treatment for interest income from banking sector fixed deposits, real estate construction projects entrepreneurs should therefore seek for their project funding through bank fixed deposits since a fixed deposit in the bank incurs a final withholding tax of 15% compared to other instruments such commercial paper issued by a developer, which will incur a total tax of 30%. These differences in tax treatment then drive individuals to purchase bank fixed deposit papers compared to commercial papers or privately issued notes which will incur higher interest rates therefore making banking fixed deposits affordable for housing development.

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