Inflation Risks Management Practices and Performance of Real Estate Construction
Housing Projects in Kenya; A Case of Real Estate Construction Housing Projects in
Busia County

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Inflation Risks Management Practices and Performance of Real Estate Construction Housing Projects in Kenya; A Case of Real Estate Construction Housing Projects in Busia County

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Abstract

Purpose: This study was about inflation risk management practices, and performance of real estate construction housing projects in Busia County.

Methodology: The target population for this study was 1832 respondents and a sample of 328 was drawn from the target population using Yamane (1967) formula $n = \frac{N}{1+N(e)2}$. The data for this study was collected using questionnaires, focus group discussions and interview schedules. Data was analyzed using descriptive and inferential statistics. Descriptive statistics involved quantitative 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 pearson correlation and regression analysis.

Findings: The study found that inflation risk influences performance of real estate construction housing projects in Busia County; implying that using the Likert scale, the respondents agreed that Inflation Risk Influences Performance of real estate construction housing projects in Busia County. The overall correlation coefficient for Inflation Risk Management and Performance of real estate construction housing projects in Busia County was found to be 0.657 with a p-value of 0.000 < α=0.05 implying that from the views of participants in the study the results indicated that there was a significant relationship between Inflation Risk Management and Performance of real estate construction housing projects in Busia County; leading to rejection of the null hypothesis and acceptance of the alternative hypothesis. The simple linear regression coefficients as well as the Pearson correlation results indicated that there was significant influence of Inflation risk management on Performance of real estate construction housing projects in Busia County. In conclusion, the small p-values; implied that there was a significant influence of Inflation risk management on Performance of real estate construction housing projects in Busia County.

Unique Contribution to Theory, Practice and Policy: The study recommended that there is need to deliver high number of affordable housing units that will be affordable to low income households irrespective of high levels of inflation.

Keywords: *Inflation Risk, Management Practices, Performance of Real Estate Construction Housing Projects*

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 & Taiske, 2015). Real estate investment plays a crucial role in providing job opportunities, sheltering households, enhancing income distribution and alleviating poverty (International Monetary Fund, 2016). 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, Ogulana & Lan, 2017).

Background Conceptual and Contextual Discussion

Globally, real estate development has played a profound role in growing the economies of nations over time. For instance, organized real estate in the United States of America (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 35 million housing units are made available annually to accommodate the fast growing population (UN-Habitat, 2019). Address of planning and inflation 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 inflation risk of real estate investment has further increased to higher levels. Therefore, decisions about the real estate project investment should predict the inflation 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 (UN-Habitat, 2019). This has made most domestic and foreign scholars and economists develop concern about this problem (Bonnet, Bono, Chapelle & Wasmer, 2019).

Deterioration in real estate markets caused by inflation risk across large parts of Europe since 2007/2008 clearly demonstrates the significance of the real estate industry for the world economy resulting from the impact of the financial crisis. 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 (Bonnet et al., 2019). 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 inflation 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 inflation 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 inflation risk management culture more entrenched in the industry (Stein, 2018).

As estimated by UN-Habitat (2019), 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 & 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 due to inflation in Kenya and the ratio of household debt to Gross Domestic Product (GDP) consequently affecting performance in this sector (IMF, 2016). In the recent past, Kenya has witnessed an upsurge in real estate investment because of reduced mortgage loans rate (International Monetary Fund, 2016). 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 inflation risk management practices and performance of real estate construction housing projects in Kenya focusing mainly to real estate construction housing projects in Busia County.

Research Objective

To examine the extent to which inflation Risks Management influence Performance of Real Estate Construction Housing Projects in Busia County.

Research Hypothesis

H₀: There is no relationship between inflation Risk Management and Performance of Real Estate Construction Housing Projects in Busia County.

LITERATURE REVIEW

Persistent change in price level has had an unfavorable effect on the demand for houses financed by mortgages. These continuous changes in the rate of inflation tend to lead to corresponding fluctuations in construction activity and this rests on the facts that persistent change in price level and the anticipation of its continuation tends to raise interest rates, including mortgage rates (Ralls, 2020) hence influencing real estate construction housing project performance. The increase in interest in turn raises the annual payment needed to purchase a house of given value hence influencing performance of real estate construction housing projects.

Inflation Risk Management

Inflation has had an unfavorable effect on the demand for houses financed by mortgages as it tends to lead to corresponding continuous change in construction activity and this rests on the facts that inflation and the anticipation of its continuation tends to raise interest rates, including mortgage rates, by an inflation profit needed to compensate the lender for the anticipated reduction in the purchasing power of the buyer's claim (Ralls, 2020) hence influencing real estate construction housing project performance. According to Ralls (2020), this risk can best be managed by buying real estate construction housing materials sooner rather than later and storing them until they're needed to help reduce price increase risk. The increase in interest in turn raises the annual payment needed to purchase a house of given value, although, this increased interest rate and eventual outcome of annual payment do not perse change the real cost of buying a house in that they are offset by the profit to the debtor resulting from the gradual decline in the purchasing power of his/her debt and of his/her annual payment, but this risk can be mitigated by focusing on contracts with indexed price points and caps (Crowley & Kevin, 2018). However, the rise in interest rates resulting from inflation has evaluable effect on the time profile of the stream of annual payments, expressed in terms of constant purchasing power. Consequently, this affects performance of real estate construction housing performance. Whereas in a world of constant prices these payments are constant over the life of the mortgage, the inflation-motivated increase in interest rates results in an increase in the level of real payments in the early years of the contract with similar reduction in the later years (Lowe & Gibson, 2019).

In a situation where the household's ability to meet the annual payment is constrained by its current income, the increase in the annual payment in the early years of the contract is bound to have an unfavorable effect on the demand for housing by forcing many households to postpone or forego homeownership or scale down their demand due to inflation risk hence affecting performance of real estate construction housing projects (Harvey, 2018). A study carried out by Ralls (2020) on Inflation or Deflation: Prepare for Either in the US showed that inflation influences the scaling up in interest rate which in turn scales up the annual payment

needed to acquire a house of given value. This finding was supported by (Crowley and Kevin, 2018) in their study on the influence of inflation on home ownership in the US. According to the study, inflation rates influence interest rates on deposits and therefore influence the purchasing power of owning a home. The study finding was further supported by Kimondo, Ombui and Kagiri, (2018) who found that inflation adversely influenced banks' lending rates to a great extent.

Performance of Real Estate Construction Housing Projects

The demand for real estate construction housing projects has played a major role in performance of real estate construction housing projects all over the world since it defines its rate of turn over (Sanders, 2019). In a study carried out in Europe by the European commission (2018) on influence of demand on real estate construction housing projects performance, the study found that increased demand for real estate construction housing 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 housing project performance. Moreover, Sanders (2019) in a study carried out in Pakistan to evaluate factors influencing performance of real estate construction housing 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 housing 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 housing projects, utility of risk management strategies and deeply understanding the business area are critical success factors and had a significant impact on project performance. According to the study, 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 housing industry to a greater extend all over the world. In a study conducted in Nepal to investigate risk management in real estate housing 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 and real estate made more people invest their money in real estate. Consequently, many houses were developed to an extend 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 housing 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 housing project performance.

Inflation Risk Management and Performance of Real Estate Construction Housing Projects

Persistent change in price level has had an unfavorable effect on the demand for houses financed by mortgages. These continuous changes in the rate of inflation tend to lead to corresponding fluctuations in construction activity and this rests on the facts that persistent change in price level and the anticipation of its continuation tends to raise interest rates, including mortgage rates, by an "inflation premium" needed to compensate the lender for the anticipated erosion in the purchasing power of the buyer's claim (Ralls, 2020) hence influencing real estate construction housing project performance. In a study carried out by Ralls (2020) on ''Inflation or Deflation: Prepare for Either'' in the US showed that, inflation influences the scaling up in interest rate which in turn scales up the annual payment needed to acquire a house of given value. The objective of the study was to investigate the influence of inflation on interest rate of housing loans in the US housing development projects.

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 1600 real estate firms and a sample of 160 real estate firms were selected and administered with structured questionnaires. Collected data was coded and analyzed for descriptive and inferential analyses using statistical package for social sciences (SPSS). The study found that the change on real cost of carrying a house resulting from higher interest rate and resultant from annual payment as being offset by the gain to the debtor resulting from the gradual decline in the purchasing power of his/her debt and of his/her annual payment. This finding was supported by (Crowley &Kevin, 2017) in their study on influence of inflation on home ownership in the United States. According to the study, inflation rates influences interest rates on deposits and therefore influencing the purchasing power of owning a home. The objective of the study was to investigate influence of inflation on home accusation in the US.

Harvey and John (2017) conducted a study on what actually causes inflation and who gains from it in South Africa. The objective of the study was to investigate on how inflation influences repayment of outstanding debt. The methodological approach employed during the study was survey. The target population was 1800 households which had benefited from housing finance to acquire homes. A sample of 180 households was administered with questionnaires. The data Collected was coded and analyzed for descriptive and inferential analyses using statistical package for social sciences (SPSS). The study found that to acquire a house, a household is limited by its current income and the fraction of the same that it can devote to housing. The study further found that as inflation increases, there will be decline in the outstanding debt. As a result, the owner's equity also grows rapidly if the value of the house remains the same in real terms.

On the other hand, Tarus, Chekol and Mutwol (2018) carried out a study on determinants of interest rates in Uganda. The objective of the study was to investigate on how inflation influences changes in interest rates repayment of outstanding debt. The methodological approach employed during the study was survey. The target population was 1500 households

which had benefited from housing finance to acquire homes. A sample of 150 households was administered with questionnaires. The data Collected was coded and analyzed for descriptive and inferential analyses using statistical package for social sciences (SPSS). The study found that one of the key determinants of interest rates spread was inflation rate and other macroeconomic factors. According to the study, interest rates spread influence interest rates on deposits which are determined by inflation rates. The inflation rates consequently influence the purchasing power of owning a home.

Kimondo, Ombui and Kagiri (2018) conducted a study on determinants of interest rate spread of commercial banks in Kenya. The objective of the study was to determine whether inflation affects performance of construction housing projects financed by commercial banks. The methodological approach employed during the study was survey. The target population was 680 construction housing projects financed by commercial banks and a sample of 68 of these projects owners were administered with questionnaires. The data collected was coded and analyzed for descriptive and inferential analyses using statistical package for social sciences (SPSS). There was a revelation from the study findings that majority of the respondents agreed on inflation rates influencing interbank and inter-branch lending rates to a great extent. There was further agreement that inflation rate adversely influences banks' lending rates to a great extent. However from the research findings the study found that majority of the respondents were of the opinion that the inflation rates influences interest rates on deposits. The findings were similar to those of Were and Wambua (2019), who identified that inflation rate highly influences interest rates spread which consequently influences the house hold purchasing of owning a home.

METHODOLOGY

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 $n = \frac{N}{1 + N(e)2}$. Where N is the target population, n is sample size and e is the error term. 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).

A questionnaire was the main data collection instrument, supported with focused group discussions for tenants, interview schedules for real estate housing entrepreneurs and document check list for the documented records for key two personnel officers in charge having prerequisite experience in real estate development, one from KNBS and one from MoH Busia County. 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 dependent variables.

FINDINGS AND DISCUSSIONS

This section covered findings and discussions of the study.

Questionnaire Return Rate

Out of the 328 questionnaires administered to the participants in the real estate construction housing projects in Busia County, 320 were dully filled giving a return rate of 97.56%. The questionnaire return rate results are presented in Table 1.

Table 1: Questionnaire Return Rate

Participants	Sampled	Returned	Return Rate%
Real Estate construction housing 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 inflation risk management practices, on performance of real estate construction housing 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

The information sought on whether gender was significant to the county government for policy decision making and planning of real estate construction housing projects. It was imperative to investigate the respondents' gender to establish gender parity in management of real estate construction housing projects in Busia County and its influence on performance in the sector. The respondents were therefore asked to state their gender and the results are presented in Table 2.

Table 2: Distribution of Respondents by Gender

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

Table 2, 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 housing projects participants outnumbered their female counterparts, implying that there was still gender parity in real estate construction housing projects. The implication of this result to the study is that majority of men devote their time and financial resources and get preoccupied in real estate construction housing projects development to generate income for self-sustainability and hence enhance performance of real estate construction housing projects while their female counterparts commit their financial resources to other commitments. This finding was supported by William (2017) study who found that the social –cultural dimensions of the environment plays a major role in development of real estate construction housing projects in any economy. According to William (2017), the social- cultural dimension consists of customs, lifestyles, and values that characterize a society.

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 significance of this study is to find out which age bracket is actively involved in real estate construction housing project development and why. The findings were analyzed to show respondents' distribution by age category in terms of frequency and percentage as provided in Table 4.3.

Table 3: 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**	

Source: Field Data Work 2021

Table 4.3, 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 housing projects participants were relatively mature enough and had prerequisite experience pertaining inflation risk management practices, project environmental factors and performance of real estate construction housing projects in Busia County. This finding was supported by Engobo (2019) study who found that age, maturity level and life experience of a person influences his/ her ability to save and invest in development projects.

Distribution of Respondent 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 inflation risk management practices, project environmental factors and performance of real estate construction housing projects in Busia County, Kenya.

Table 4 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**

Source: Field Data Work 2021

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 inflation risk management practices project environmental factors and performance of real estate construction housing projects in Busia County and hence would have an impact positively on performance of real estate construction housing 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 real estate construction housing profession. The number of years by the participants in the organization was sought to establish whether they had the prerequisite experience in financial risk management strategies and project environmental factors likely to influence performance of real estate construction housing 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 5.

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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**	

Source: Field Data Work 2021

Table 5, 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 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 inflation risk management practices decision making of real estate construction housing projects in Busia County for a considerable number of years and hence had the necessary prerequisite background information in matters to do with financial and risk management strategic decision making of real estate housing 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, multicollinearity 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 6.

Table 6: Tests for Normality for Financial Risk Management Strategies

Tests of Normality						
Financial risk management strategies,	**Kolmogorov-Smirnov**[a]			**Shapiro-Wilk**		
	Statistic	**Df**	**Sig.**	**Statistic**	**Df**	**Sig.**
Inflation risk management	0.254	319	0.193*	0.838	319	0.089

Source: Field Data Work 2021

The results of Kolmogorov-Smirnov test statistics and Shapiro- Wilk Test shown in Table 6 indicates that in all the responses tapped on the Likert scale for the independent and moderating variables under investigation (Inflation risk management; p-value =0.193>0.05). The P-values were all 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 (Inflation risk management; SW-test statistics=0.089) 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 7.

Table 7: Linearity Test for Financial Risk Management Strategies

Financial risk management strategies	**N**	**Linearity**
inflation risk management	320	0.657
*Correlation is significant at 0.05 level (2-tailed)		

Source : Field Data Work 2021

From the results in Table 7, all the correlation values of the financial risk management strategies indicated a positive degree of linear relationship with performance of real estate housing construction projects.

Testing for the Presence of Multicollinearity

Presence of multicollinearity was tested using variance inflation factors (VIF), the basis of recommendations (Hair, Hult, Ringle & Sarstedt, 2014). The threshold used to test existence of multicollinearity was set at a minimum value of 10. Consequently, a VIF value above 10 was deemed to imply existence of Multicollinearity. A collinearity diagnosis of the independent variable was performed and the results are presented on Table 8.

Table 8: Collinearity Statistics Results

Variable	Tolerance	VIF
Inflation risk management	0.531	1.882

Source: Field Data Work 2021

From Table 8, analysis of collinearity statistics shows that these assumptions have been met, as the tolerance scores were all above 0.2 (statistics= 0.531 for inflation risk management). The variance inflation factors (VIF) were also all below 10 (VIF= 1.882 for inflation risk management).

Test for Independent Errors in the Model

A Durbin-Watson test was used to check whether the residuals in the model are independent (uncorrelated). As a conservative rule, values below 1 or above 3 are cause of concern and may render the analysis invalid (Andy, 2009). The Durbin -Watson statistics results is presented in Table 9

Table 9: Test Statistics for Independence of Errors

Model	Durbin-Watson Statistic (D)	Conclusion
	1.615	Error terms are independent

Source: Field Data Work 2021

The Durbin -Watson statistics from the model summary Table 9 was 1.615 which was neither below 1 nor above 3 indicating that the residuals were independent and hence the assumption has been met.

Performance of Real Estate Construction Housing Projects

Performance of real estate construction housing 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 is key indicators of performance of real estate construction housing projects (UN-Habitat, 2019). Data was collected to measure ten indicators of performance of real estate construction housing 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.

Inflation Risk Management and Performance of Real Estate Construction Housing Projects

Inflationary risk is the risk that the future real value of an investment asset or income stream will be reduced by unanticipated inflation. Inflation risk management is a process of controlling the dangers the banks are likely to experience when addressing the challenge of persistent increase in price level in marketing real estate construction housing projects products (Sheedy,

2019). The study sought to find out whether inflation risk management influences performance of real estate construction project performance in Busia County. Therefore, the participants were requested to give their opinions on their level of agreements or disagreements with the ten statements of inflation risk on a Likert scale of 1-5 where Strongly agree (SA) =5, Agree (A) =4 Neutral (N) =3, Disagree (D) =2and Strongly disagree. (SD)=1. The results were analyzed and presented using frequencies, percentages, means and standard deviations for each response in each item.

Correlation Analysis of Inflation Risk Management and Performance of Real Estate Construction Housing Projects

The study sought to examine the relationship between inflation Risk management and Performance of Real Estate Construction Housing Projects. Pearson correlation coefficient was used to test the relationship between inflation risk management and performance of real estate construction housing projects; this was done at 95% level of confidence. The correlation results were presented in table form. The overall correlation coefficient for inflation risk and Performance of real estate construction housing projects was found to be 0.657 with a P-value of $0.000 < 0.05$,implying that there is a significant relationship between inflation risk management and Performance of real estate construction housing projects leading to rejection of the null hypothesis and acceptance of the alternative hypothesis, and hence the research findings conclude that there is a significant relationship between inflation risk management and Performance of real estate construction housing projects.

Regression Analysis of Inflation Risk Management and Performance of Real Estate Housing Construction Projects

Simple linear regression was adopted to investigate how inflation risk management influences performance of real estate construction housing projects. It was necessary to get the views of the participants on the influence inflation risk management and performance of real estate construction housing projects. The rationale of using the simple regression model was to establish how inflation risk as a predictor significantly or insignificantly predicted the performance of real estate construction housing projects. These were further discussed in the subsequent sub-themes:

Model Summary of Inflation Risk and Performance of Real Estate Construction Housing Projects

The model summary sought to establish how inflation risk is a predictor that significantly or insignificantly predicted the performance of real estate construction housing projects. The model summary is presented in Table 10.

Table 10: Regression Model Summary Table of Inflation Risk and Performance of Real Estate Housing Construction Projects

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.657[a]	0.432	0.430	0.540

Predictors: (Constant), inflation risk

Source: Field Data, 2021

The model summary Table 4.10 indicated that there is a positive correlation(R=0.657) between inflation risk and performance of real estate construction housing projects and those predicted by the regression model. In addition, 43.2% of the variation in the performance of real estate construction housing projects was explained by inflation risk.

ANOVA of Inflation Risk Management and Performance of Real Estate Housing Construction Projects

The study sought to establish if the regression for ANOVA model was best fit for predicting performance of real estate construction housing projects after use of inflation risk. The regression ANOVA results are presented in Table 11.

Table 4.11: An ANOVA of the Regression of Inflation Risk and Performance of Real Estate Construction Housing Projects

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	70.343	1	70.343	241.663	0.000[b]
	Residual	92.563	318	0.291		
	Total	**162.906**	**319**			

a. Dependent Variable: Performance of real estate construction housing projects

b. Predictors: (Constant), inflation risk

Source: Field Data, 2022

The ANOVA results indicated that F-statistics =241.663 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 in significantly better prediction of performance of real estate construction housing projects.

Coefficients for Regression of Inflation Risk and Performance of Real Estate Construction Housing Projects

The study sought to establish whether there was influence of inflation risk and Performance of real estate construction housing projects. The regression coefficients results are in Table 12.

Table 12: Coefficients for the Regression of Inflation Risk and Performance of Real Estate Housing Construction Projects

Coefficients[a] Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	**Std. Error**	**Beta**		
1	(Constant)	1.081	0.187		5.791	0.000
	Inflation risk	0.752	0.048	0.657	15.55	0.000

Source: Field Data, 2021

The simple linear regression coefficients result indicated that there was significant influence of inflation risk on performance of real estate construction housing projects. The un standardized coefficient of the constant term ($\beta_0 = 1.081$; $p < 0.05$) and inflation risk ($\beta_1 = 0.752$; $p < 0.05$) were statistically significant. Using the standardized beta value (0.657), inflation risk stood as the best predictor among other predictor variables in predicting performance of real estate construction housing projects. The regression model for inflation risk was $y = 1.081 + 0.752x$ implying that for each unit of inflation risk, performance of real estate housing construction projects marginally changed by 0.752 units. It was therefore concluded that inflation risk on performance of real estate construction housing projects were positively and linearly related.

Conclusions

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

Recommendations

The study recommended that to deliver the high numbers of affordable housing units required, the process of land and real estate transactions needs to be much faster and less susceptible to rent collection by gate keepers, policy actions, such as reduction of income tax for real estate construction housing developers as this would act as a motivator for real estate construction housing development.

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