# EFFECT OF MARKET FACTORS-BASED BEHAVIOUR BIASES ON THE PERFORMANCE OF REAL ESTATE INVESTMENTS

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## ABSTRACT

*This study aimed to examine the effect of market factor-based behavioral biases on the performance of real estate investments in Kenya. Specifically, the research focused on understanding how behavioral biases such as reliance on past information, short-term return preferences, and use of earnings for long-term savings or short-term projects impact real estate investment decisions. Additionally, the study tested the relevance of the Efficient Market Hypothesis (EMH) within the Kenyan real estate market. The study adopted a positivist research paradigm and a descriptive research design, targeting 123,471 real estate investors represented by 284 registered real estate agents in Nairobi, Kenya. A multi-stage sampling process resulted in a sample size of 384 respondents, with 353 completed questionnaires representing an 83% response rate. Data was collected using Likert-type questionnaires and analyzed using descriptive and inferential statistics, including bivariate regression analysis to determine the relationship between market factor-driven biases and real estate investment performance. The results revealed a significant relationship between market factors-based behavioral biases and the performance of real estate investments in Kenya, with market biases explaining 27.8% of the variation in investment performance ($R^2=0.278$, $p<0.05$). Key factors influencing market biases included reliance on past information, short-term return preferences, and the use of earnings for both long-term savings and short-term projects. The findings support the existence of market anomalies and inefficiencies, indicating that real estate investors in Kenya often make irrational decisions influenced by behavioral biases rather than purely rational analysis. This study contributes to behavioral finance by highlighting the significant role of market factor-driven biases in shaping investment decisions, challenging the assumptions of the Efficient Market Hypothesis (EMH) in the context of real estate investments. It emphasizes the need to incorporate behavioral considerations into traditional finance theories.*

**Keywords**: *Market Factors-Based Behavioral Biases, Real Estate Investment*

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## INTRODUCTION

EMH means that prices of future real estate cannot be predicted basing on presently accessible information. To clearly indicate inefficiencies, Shiller (1981) and LeRoy and Porter (1981) did a study on DJIA, S&P 500 Index and a number of blue-chip stocks. The researchers found out that instability in securities is 5 to 13 times higher than the variations in current worth of future bonuses which could not be explained by market efficiency perspectives. This contradicts EMH view point that an investment price varies barely when there is expectation of bonus or there is novel information available in the market. The term anomaly can be defined as a divergence from currently acknowledged paradigms which are too systematic to be dismissed as random error, too essential to be accommodated by relaxing the normative system and too prevalent to be assumed (Tversky and Kahneman, 1986).

According to EMH, it's not likely to forecast the future value of an investment based on the available information. However various studies have been done and showed it's likely to forecast future value by utilizing. Other researchers have used yields of dividend and determined important signs to predict the investments future returns; to be precise, if the yield is high, then the return of investment will be high as well (Rozeff (1984): Fama and French, 1988).

Kluger and Miller (1990) studied the relationship between the property market liquidity and the opportunity cost. The study developed liquidity measure that is strongly linked to time on market. The study showed that their measure of liquidity is linked to the house characteristics in question.

Keogh and D'Arcy (1994) in 1993 carried out comparative research of the performance and behavior of London plus two developing property markets in Europe, Milan and Barcelona. Considered middle to the center of this research, this literature review sought to determine how maturity of property market emerged. It also wanted to establish how various factors affected market maturity. Ever since 1994 when it was originally supported it has been more often than not used to the up-and-coming markets of South East Asia and Central Europe. The study derived that; diversity extent of use and objectives of investment provided for property profession, flexibility, market research and information, property rights and market practices standardization manipulate maturity of the market.

Kalra and Chan (1994) in their research on the effects of interest rates and economic conditions (macro-economic) on the time on market of real estate property, concluded that time on market is influenced by economic conditions of the region, with time on market being positively associated to rates of interest and negatively linked with employment area.

Jud, Winkler and Kissling (1995) undertook a study on Market Liquidity of Residential Housing and Price Spreads in Greensboro, North Carolina. This research was able to deduce that liquidity of housing stock is affected by costs of transaction, housing costs, time on the market as well as market information. Empirical estimates of the study indicated that spreads of housing market are positively connected to costs of transaction costs and prices and negatively linked with the prices standard deviation. Because spreads mirror liquidity of market, the study suggested liquidity to be transaction costs function and information of market.

Kwok and Tse, (2006) carried out research on the liquidity effects on the housing markets, case study of China, Hong Kong real estate market. From the empirical evidence derived in the study from the housing market of Hong Kong powerfully supports the effects of transaction-based liquidity and combined market segmentation hypothesis in the market of housing in the section. Housing developments units with a superior return rate sell at a considerable quality. Generally, 9.2 percent of the total percentage variation in the prices of two certain units of housing in our example may be ascribed to effects of liquidity. Opposite to conservative wisdom, housing development size is

not in universal positively associated to the turnover rate and therefore, liquidity of the asset, whilst a less clear factor of candidate the housing units' quality appears to matter.

Lin and Vandell (2007) carried out research to analyze biases of Pricing and Illiquidity in the market of Real Estate. Their study addressed the dynamics of price and illiquidity micro-analytic foundations in the market of real estate by incorporating theory of modern portfolio with copies describing the process of real estate transaction. They concluded that methods of estimation that are traditional of real estate risk and return, that copy in a inexperienced fashion from theory of finance by disregarding illiquidity of real estate, not only play down the risks of real estate but as well exaggerate returns of real estate.

Jing and Siqi (2008) from China in the University of Tsinghua under the Institute of Real Estate Studies carried out research about the determinants of housing liquidity. A simple buyer offers' distributions model was utilized to hypothetically discover the housing liquidity determinants in a process of search. A model of experiential ordinary least squares of the time-on-market was established by use of data gathered in four cities in China (Beijing, Guangzhou, Shenzhen and Shanghai). The findings showed that in the selected four cities in China, maturity of market dominated the housing liquidity variation, with the housing characteristics effects, search strategy, conditions of market and seller's search cost being less important to the equation of time-on-market.

In a recent study related to housing liquidity and real estate market maturity by Chao He, Wright and Yu Zhu (2012) on housing and liquidity within the United States of America real estate market. This study also sought to examine various mechanisms for determining the terms of trade, and different ways of specifying credit restrictions. They also studied the monetary policy impact on housing markets.

The conclusion of this study was that there was a connection between the large rises in loans of home-equity and the United States house-price bang. Since liquidity is endogenous, and depends to some extent on beliefs, even when essentials are determinants and time invariant equilibrium house prices can show complex patterns, together with chaotic, stochastic as well as cyclic trajectories. The framework used was tractable; nevertheless, it captured numerous most important housing markets features qualitatively and to some extent quantitatively.

## LITERATURE REVIEW

The role of market information on pricing of financial securities dates back to the 19th Century. Several scholars have been credited with shaping the techniques of assets valuation and use of information. Over the Century, two schools of thought have been developed (Bodie, 2005). On one extreme are those financial specialists to believe that information is irrelevant in valuation of security prices. These fundamentalists assume that investment prices take a random walk or a drunkard walk in which case then, it would be difficult to predict the return from an investment. There is a large convergence of opinion on the random walk theory Bachekier (1900), Cowels (1933), Kendall (1953), Roberts (1959). This implies that no one using either available or prospective information can determine the asset prices and that information available in the market is absolutely irrelevant. This is way contrary to available decision theory, which postulates that relevant and reliable information is crucial to sound decision making. However, in the event that this is not the case then, there could be market bias and inconsistencies based on this school of though.

On the other extreme in behavioural finance is the market efficiency Theorists. These positivists view that information is useful in evaluating and predicting asset prices. Fama (1965) developed Efficient Market Hypothesis (EMH) and in his view, it is impossible to rely on past information and make superior margins in the investment market.

Based EMH, it is then possible to make better returns from using information, that is, past information, publicly held information and also from insider information.

Fama (1970) affirms that a resourceful market is that market in which prices at all times completely reflect all accessible information. Jones (1993) and Shleifer (2000) stipulate that an efficient market can exist if there is existence of a big number of rational shareholders who participate actively in the market in the attempt to capitalize on profits and if irrational investors exist, then their irrational trades cancel each out without affecting the prices. The third and final assumption on EMH is that information exists freely and it is readily accessible to all participants of the market at roughly the same instance and shareholders react fast to this information triggering prices of stock to change accordingly.

EMH is separated into three segments; strong form, semi-strong form and weak form. Bodie *et al*. (2007) notes that in the efficiency of weak form, present prices of stock mirror all past data for instance past trading volumes and prices. This is consistent with the random walk hypothesis findings that one cannot make super normal profits by just analyzing past information. Efficiency of semi-strong form upholds that besides past information, information that is publicly available should be fully reflected in the stock price. Such publicly held information may include the firm's production line, accounting practices, stock split announcements, dividends, quality of management.

Strong form of efficiency states that prices of securities mirror all information together with the past, information that is publicly available in addition to all privately held information. Brealey *et al., (n.d.)* notes that prices in such a market could at all times be reasonable and that not even insider sellers can strike the market.

Based on this school of thought and the assumption of EMH, it is then expected that in absence of market bias, those to make investment decisions

using past information, publicly held information as well as insider information should earn higher returns compared to those who do not. Market Bias could either work in the real estate market to drive house prices in either direction. In skewed market information, that is, information that over emphasis volume of sales, location of houses, returns on investments and relevance of information in the markets.

Many factors would influence the decision regarding investment in real asset. Among these factors is the liquidity status of the investors. Liquidity theory demonstrates, when and how liquidity is a key function of investment. The theory of liquidity was established by Hicks. Nelson (1972) states that this theory forecasts that a term quality might be attained by investing capital in long term bonds since holders of bonds will need recompense for disclosure to fluctuations of capital. The liquidity preference theory illustrates that, investors are usually risk reluctant, have a preference to short term maturities plus they need a premium so as to entrust in securities that are long term.

The theory of Liquidity Preference confesses the significance of expected prospect spot rates; however, it provides more significance to the risk preferences effects of market contributors. Risk reluctant lenders are usually extra anxious towards the steadiness of principal other than the incomes stability. Additionally, it is said that widespread borrowers as well as lenders risk aversion and, does not restrain the expression structure in the way defined by the theory of liquidity preference.

According to Keynes (1936) liquidity preference is defined as the claim for money which is said to be liquidity. Money demand as an asset was hypothesized to depend on the foregone interest by not holding property. This theory disputes that the rate of interest cannot be a recompense for saving as such since, if an individual holds her/his saving in form of cash, keeping it won't receive any interest. The theory opines that the demand for as well as supply of money determines the interest. Liquidity preference has a meaning of the want of the public

to grasp cash. Keynes reveals that exists three reasons behind the want of the people to hold liquid money: Motive of transaction: public choose liquidity to reassure fundamental transactions, since their proceeds are not continually available. The total quantity of liquidity claimed by public depends on the income level. The high the income the more money claimed for running improved spending.

Secondly, precautionary motive: public choose to have liquidity in the case of communal unforeseen problems that require extraordinary costs. The total amount of money claimed for this reason goes up as income goes down. Thirdly, Speculative motive: public hold on to liquidity to hypothesize that price of property will drop. It is expected then, that when the rate of interest goes down public demand more money to retain awaiting the rate of interest to go down, which could bring down the property price to maintain its yield in proportion to the rate of interest. Therefore, the lower the rate of interest, the more money claimed and the opposite is true. This theory offers a guide in determining why people or investors will hold money in liquid form and at what time they prefer to use the money. It is of importance in determining the issue of housing liquidity in the Kenyan real estate industry.

However, the liquidity theory has some gaps. Firstly, it has been pointed out that the rate of interest is not purely a monetary phenomenon. Real forces like productivity of capital and saving by the people also play an important role in the determination of the rate of interest. Secondly the theory assumes that the rate of interest independent of the demand for investment funds. The cash-balances of the investors are largely influenced by their demand for saving for capital investment. This demand for capital investment depends upon the marginal revenue productivity of capital.

This study attempted to assess the effect of market factors-based behaviour biases on the performance of real estate investment in Kenya.

## METHODOLOGY

This study adopted the positivist research paradigm, characterized by conviction in theory before study (Koshy, 2010; Cooper and Schindler, 2011). The paradigm emphasizes numerical explanations derived from hypotheses that are empirically testable, a core tenet of social science research (Koshy, 2010; McMillan & Schumacher, 2010). A descriptive research design was utilized to meet the study objectives, targeting a population of 123,471 real estate investors represented by 284 registered real estate agents in Nairobi, Kenya. These agents served as custodians of the investor population, which exhibited homogeneous investment return expectations. A multi-stage sampling process was employed, and the sample size of 384 was determined using the Fisher et al. (1983) formula. Primary data was collected through questionnaires.

The study focused on market factor-driven behavioral biases while also incorporating financial literacy as a moderating variable. Ordinal scale data and summated scales were used to measure the variable. The ordinal scale ranks actions without ensuring equivalent intervals, meaning the numbers do not represent absolute quantities or equal differences between ranks (Chavandrakandan, Venkatapirabu, Sekar & Anandakumar, 2011). The questionnaire predominantly used a Likert-type scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"), facilitating the analysis of responses.

To examine the effect of market factor-driven behavioral biases on real estate performance in Kenya, the study employed a bivariate equation. In this equation, $\beta 4$ represents the rate of change in performance associated with a unit change in market factor-driven biases. The performance equation is expressed as

$$REP = \alpha + \beta 4 X 4$$

Despite carrying out the regression analysis, diagnostic tests were carried out

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## RESULTS AND DISCUSSION

This study targeted 426 respondents from real estate investors distributed geographically and area of real estate investments. Out of these 426 questionnaires, 353 were completed and returned. This represents a response rate of approximately 83%.

To analyze the effect of market factors-based behaviour biases on the performance of real estate investment in Kenya, both descriptive and inferential statistics were conducted. The analysis is presented below for descriptive statistics, drivers of market bias and for inferential statistics.

### Descriptive Analysis for Market Based Bias

To assess Market Based Bias the respondents were asked six statements which were laid on a likert scaled questionnaire. Table 1 displays the frequencies of responses in terms of percentages against each Market Bias statement. Frequencies of the responses on the effect of market-based bias on real estate investment performance are presented on Table 1 indicate that sixty eight percent (68%) of the respondents consider past information of the real estate industry before making an investment decision. Further, 56% respondents agreed that they would use the proceeds from real estate for long term savings. Similarly, 53% of the participants felt that they would use the real estate earnings to fund other short-term projects. 54% of the respondents agreed that currently information about real estate influences their future investment decisions.

The mean score for the responses was 3.47 indicating that many participants agreed with the statements that market based bias has an influence on real estate investment performance. The standard deviation for the responses was 1.02 indicating a reasonable convergence of the respondents towards the response.

These findings support the findings by Yacin (2010) who explains that very little investing activities are expected by rational investors based on the publicly available information; however huge volumes of buying and selling are experienced for no apparent reason hence evidence of market anomalies. This is an indication that investors do not take into consideration available information when making relevant investment decisions.

Further, Konstantinidis, Katarachia, Borovas and Voutsa (2012) in their study on Efficient Market Hypothesis to Behavioural Finance concluded that Behavioural Finance treats investors as individuals and highlights that emotions, biases, and illusions cannot be rationalized; in addition, it emphasizes that information is inefficient.

The findings support the findings by Clayton (1998) who examined the short-run relationship between REIT prices and the value of direct real estate owned by REITs. The findings showed that future returns for apartments can be predicted using historical annual returns and a measure of deviation from fundamental prices. Further still, studies by Farlow (2004) argues that the most plausible explanation for the dramatic increase in real estate prices cannot be found in supply and demand fundamentals rather, it is posited that real estate prices are, to a large extent, determined by the behaviour of consumers and financial institutions which support the results of this study.

The findings regarding market based bias shows there is irrationality in decision making among real estate investors in Kenya. Further these results show that information is inefficient market performance is rather unpredictable as people's reaction to new information is unpredictable. In this perspective, information of previous years affects and guide their decision making.

**Table 1: Descriptive Statistics for Market Based Bias**

| Market Based Bias | Strongly Disagree (%) | Disagree (%) | Neither agree nor disagree (%) | Agree (%) | Strongly Agree (%) | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| I consider past information | 3 | 6 | 27 | 43 | 22 | 3.75 | 0.95 |
| Short term returns | 7 | 15 | 28 | 34 | 16 | 3.35 | 1.14 |
| Rely on public information. | 1 | 11 | 34 | 40 | 14 | 3.54 | 0.91 |
| Capital withdrawal | 5 | 25 | 36 | 24 | 10 | 3.1 | 1.03 |
| Short term projects | 1 | 14 | 32 | 37 | 16 | 3.52 | 0.97 |
| Long term savings | 3 | 15 | 26 | 33 | 23 | 3.57 | 1.10 |

**Drivers of Market Bias**

**Test of Sampling Adequacy of Market Bias**

In order to identify and validate the appropriateness of market-based biases, the characteristic measures were subjected to Keiser-Meryer- Olkin measure of adequacy. The results of this test are presented in Table 2 which shows a KMO score of 0.518, which is well above 0.50 level (Malhotra, 2004), indicating an acceptable degree of sampling adequacy. The table also shows the Bartlett's test of Sphericity has a Chi-Square of 236.365and a significance value of 0.000 which is less than 0.001, supporting use of factor analysis as a data reduction technique for market bias.

**Table 2: Results for Sampling Adequacy-Market Bias**

| KMO and Bartlett's Test | |
|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .518 |
| Bartlett's Test of Sphericity | 236.365 |
| | 15 |
| | .000 |

**Rotated Pattern Matrix for Market Bias**

Six statements on Market based behavioural bias were subjected to factor analysis, the results indicated that the items had a factor loading of between 0.668 and 0.734 indicating that the measures were well loaded. The results of factor analysis are shown in Table 3.

**Table 3: Results for Rotated Pattern Matrix for Market Bias**

| | | Initial | Extraction |
|---|---|---|---|
| MBB1 | I consider past information on the real estate industry before making an investment decision | 1.000 | .734 |
| MBB2 | I prefer investments whose returns are short term | 1.000 | .758 |
| MBB3 | Published information about real estate influences my future investment decisions | 1.000 | .534 |
| MBB4 | Do you anticipate the need to withdraw a significant portion of your portfolio's value within the next year | 1.000 | .868 |
| MBB5 | I use my real estate earnings to fund short term other projects | 1.000 | .653 |
| MBB6 | I use my real estate earnings for long term savings | 1.000 | .668 |

Extraction Method: Principal Component Analysis.

## Communalities for Market Bias

Communality measures the percent of variance in a given variable explained by all the factors jointly and may be interpreted as the reliability of the indicator (Gason, 2008). If communalities are high, recovery of population factors in sample data is normally very good. The implication is that the variations of factors with higher extraction values can be explained by all other factors combined.

Table 4 shows the variation in a single variable with respect to all the other variables put together in the factor analysis. The factors with higher extraction values mean that their variation is explained to a greater extent by all other factors combined together. As shown in table 4 all the variables had their variability explained to a greater degree by all the others combined.

The findings indicate that the most influential component for market bias is MBB4 with a communality of 0.868. This means that 86.8% of any changes in market bias were accounted for by the extracted factors. The second most influential component for market bias was MBB2 with a communality of 0.758. This means that 75.8% of any changes in market bias were accounted for by the extracted factors.

**Table 4: Results for Communalities of Market Bias**

|  |  | Initial | Extraction |
|---|---|---|---|
| MBB1 | I consider past information on the real estate industry before making an investment decision | 1.000 | .734 |
| MBB2 | I prefer investments whose returns are short term | 1.000 | .758 |
| MBB3 | Published information about real estate influences my future investment decisions | 1.000 | .534 |
| MBB4 | Do you anticipate the need to withdraw a significant portion of your portfolio's value within the next year | 1.000 | .868 |
| MBB5 | I use my real estate earnings to fund short term other projects | 1.000 | .653 |
| MBB6 | I use my real estate earnings for long term savings | 1.000 | .668 |

Extraction Method: Principal Component Analysis.

**Table 5: Total Variance Explained for Market Bias**

| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|
|  | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.069 | 51.714 | 51.714 | 2.069 | 51.714 | 51.714 |
| 2 | .919 | 22.980 | 74.694 |  |  |  |
| 3 | .668 | 16.697 | 91.391 |  |  |  |
| 4 | .344 | 8.609 | 100.000 |  |  |  |

Extraction Method: Principal Component Analysis.

From the analysis in Table 5, one factor in the initial solution has Eigen values greater than 1. This factor accounts for 51.714% of the variability in the original variables. If a factor has a low Eigen value, then it is contributing little to the model.

## Scree Plot for Market Bias

Factor analysis helped in formulating the hypotheses for the study. The scree plot forms the basis for decision criteria that informed hypothesis formulation. Factor numbers (independent variables) with the Eigen values greater than one indicate their high extent in affecting the total variance in the model. The leftmost section of scree plot shows the variance explained by the initial solution; only one factor in the initial solution has Eigen values greater than 1. This factor accounts for 51.714% of the variability in the original variables. If a factor has a low Eigen value, then it is contributing little to the model. Figure 1 shows the scree plot for market-based bias.
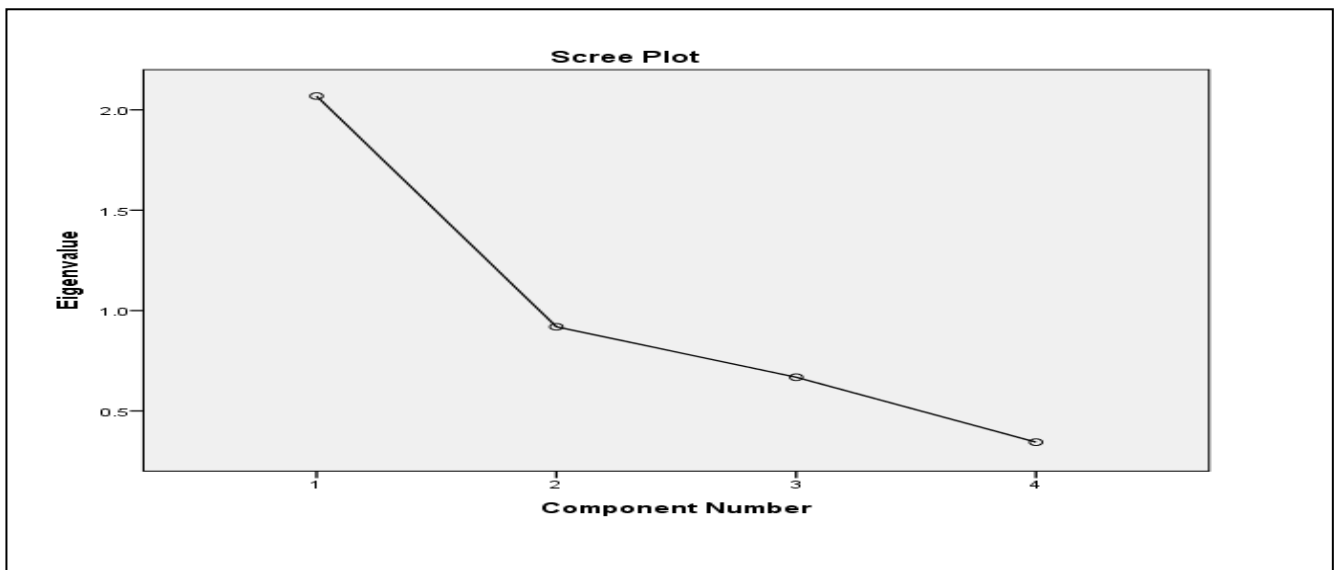
**Figure 1: Scree Plot for Market Based Bias**

**Inferential Statistics of Market Bias and Real Estate Investment Performance**

To examine the effect of investment behaviour based, herding bias, on the performance of real estate investments in Kenya, the following hypothesis was formulated:

H03: Herding based behaviour has no effect on the investment performance of real estate investors in Kenya.

In order to test this hypothesis, the first step was to model the relationship between herding bias and real estate investment performance.

**Bivariate Linear Regression of Market Bias and Investment Performance**

When the weighted market bias measures were regressed on the weighted investment performance, linear regression model summary, ANOVA and regression model coefficients were generated for further analysis.

The results of the model are presented in Table 6. The linear model summary in Table 6 shows that R=0.527 which means that there is a moderate correlation between market bias and investment performance. $R^2$= 0.278, meaning that approximately 27.8% of the corresponding variation in investment performance can be explained by a unit change in market bias.

**Table 6: Model Fitness of Market Bias and Investment Performance**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | .527a | .278 | .269 | .387 | 1.994 |

a. Predictors: (Constant), Market bias
b. Dependent Variable: Investment performance

The model presented in Table 6 was further assessed for its significance using ANOVA. The ANOVA results for the linear model are presented in Table 7.

The table indicates the model F value is 14.783 which is significant with p value p=0.000<p=0.05.

This implies that the overall model is significant in the prediction of real estate investment in Kenya.

Based on the results we therefore reject the null hypothesis that Market factors driven behaviour does not influence on the investment performance of real estate investors in Kenya and confirm that

indeed there is a statistically significant effect of market bias on real estate investment performance in Kenya.

**Table 7: ANOVA of Market Based Bias and Investment Performance in Kenya.**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.726 | 1 | 5.726 | 14.783 | .000b |
| | Residual | 135.578 | 350 | .387 | | |
| | Total | 137.304 | 351 | | | |

a. Dependent Variable: Investment performance

a.  Predictors: (Constant), Market bias

The linear regression model coefficients were further assessed for their significance in the model. Analysis of the regression model coefficients is shown in the Table 8. A test on beta coefficient of the resulting model indicates that the linear model's constant α=0.411 is significant with p value p=0.000<0.05. The coefficient β=-0.398, has a p value p=0.000<0.05, implying that it is statistically significant in the model. The findings concur with Clayton (1998) who examined the short-run relationship between REIT prices and the value of direct real estate owned by REITs. The findings showed there is enough evidence against housing market efficiency with results showing that future returns for apartments can be predicted using historical annual returns and a measure of deviation from fundamental prices. Further findings also indicate a significant role for sentiment in REIT prices, returns, and the timing of REIT equity offerings.

Further, Shleifer (2000) records that, EMH upholds that current investment prices are close to their fundamental values because of existence of rational investors or the arbitragers' who buy and sell actions of under or overpriced investments.

**Table 8: Regression Coefficients of Market Bias and Investment Performance**

| | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|
| Model | B | Std. Error | Beta | t | Sig. |
| (Constant) | .411 | .065 | | 6.299 | .000 |
| Market bias | -.398 | .063 | -0.527 | -6.270 | .000 |

a. Dependent Variable: Investment performance

**Assessment of Homoscedasticity of the Bivariate Regression Model between Market Bias and Investment Performance**

The bivariate model between market-based biases and investment performance was evaluated for a serial correlation of the model predictors. This assessment was conducted through a normal P-P plot of standardized model residuals. The results of the regressed standardized residuals of the resultant model between market-based biases and real estate investment performance are presented in the Figure 2.

Results of the plot of the expected probability and the observed probability of the standardized residual of the regressor indicate that they plot close to the cumulative probability line from 0 to 1 at approximately 45 degrees to the axis, an indication that the residuals are normally distributed. Based on these findings, it was concluded that the selected model results are normally distributed standardized residuals and that the model was appropriate for the robust analysis (Shevlin & Miles, 2010).
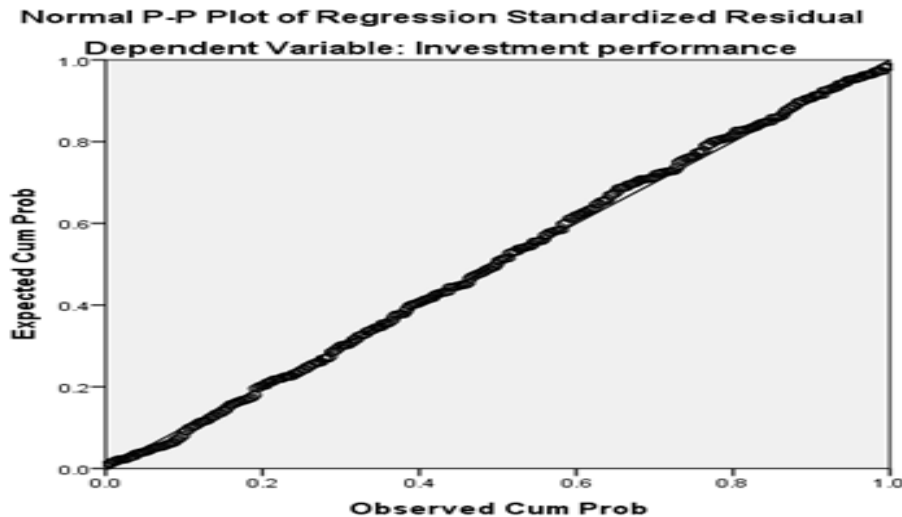
**Figure 2: Normal P-P Plot for Standardized Residual for Market Bias**

## CONCLUSION

The objective of this study sought to establish the effect of market factors-based behaviour biases on the performance of real estate investment in Kenya. Hypothesis four (H04) explored the effect of market factors-based behaviour biases on the performance of real estate investment by suggesting that Market factors driven behaviour does not influence on the investment performance of real estate investors in Kenya. Results of this study indicate that the model has a predictive value implying that there is a significant relationship between market factors-based behaviour biases and performance of real estate investment. We therefore reject hypothesis (H04) and conclude that market factors-based behaviour biases affect the performance of real estate investment in Kenya. This finding implies that market based behavioural biases affect the performance of real estate investment in Kenya. These findings are in concurrence with findings of prior studies. For example, Yacin (2010) explains that very little investing activities are expected by rational investors based on the publicly available information; however huge volumes of buying and selling are experienced for no apparent reason hence evidence of market anomalies.

Further, studies by Farlow (2004) argues that the most plausible explanation for the dramatic increase in real estate prices cannot be found in supply and demand fundamentals rather, it is posited that real estate prices are, to a large extent, determined by the behaviour of consumers and financial institutions which support the results of this study.

## REFERENCES

Bodie, Z., Kane, A. & Marcus, A. (2007). Essentials of investments (6th edition). McGraw-Hill / Irwin

Chao, H., Wright, R. & Zhu, Y. (2012). Housing and Liquidity. Meeting Papers from Society for Economic Dynamics No 94.

Clayton, J. & MacKinnon, P. (2000). Measuring and Explaining Changes in REIT Liquidity: Moving Beyond the Bid-Ask Spread. Real Estate Economics: 28, 89-115.

Cowles, III., A. (1933). Can Stock Market Forecasters Forecast? Econometrica, 1(3): 309-324.

Fama, E. & French K. R. (1988). Dividend Yields and Expected Stock Returns. *Journal of Financial Economics,* 22(1): 3-25.

**- 1276 -**

The Strategic Journal of Business & Change Management. ISSN 2312-9492 (Online) 2414-8970 (Print). ww.strategicjournals.com

Fama, E. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *Journal of Finance*, 25(2): 383-417.

Fama, E. F. (1965a). Random Walks In Stock Market Prices. *Financial Analysts Journal* 21(5): 55–59.

Fisher, A., Laing, J. E. & Stoeckel, J. E. (1983). *Handbook for family planning operations research design* (6th edition). New York:  Population Council.

Jing, W. & Siqi, Z. (2008). Determinants of Housing Liquidity in Chinese Cities: Does Market Maturity Matter? *Tsinghua Science and Technology* 13(5): 689-695.

Jones, C. P. (1993). *Investments.* New York: John Wiley & Sons.

Jud, G.D., Winkler, D.T. & Kissling, G.E. (1995). Price Spreads and Residential Housing Market Liquidity. *Journal of Real Estate Finance and Economics.* 11(3), 251±260.

Kalra, R., & Chan, K. C., (1994). Censored Sample Bias, Macroeconomic Factors, and Tune on Market of Residential Housing, *Journal of Real Estate Research* 9 (3/5): 253-262.

Kendall, M. G. & Bradford Hill, A. (1953). The Analysis of Economic Time-Series-Part I: Prices. *Journal of the Royal Statistical Society* 116 (1): 11–34.

Keogh, G. & D'Arcy, E. (1994). Market Maturity and Property Market Behaviour: A European Comparison of Mature and Emergent Markets, *Journal of Property Research*, 11: 215-35.

Keynes, J. (1936). *The General Theory of Employment, Interest and Money.* New Delhi; Atlantic Publishers & Distributors.

Kluger, B.D. & N.G. Miller, (1990). Measuring real estate liquidity. *Journal of the American Real Estate and Urban Economics Association,* 18:2: 145-159.

Konstantinidis, A., Katarachia , A., Borovas, G. & Voutsa, M. (2012). From efficient market hypothesis to behavioural finance: can behavioural finance be the new dominant model for investing? *Scientific Bulletin - Economic Sciences,* 11(2): 16-26.

Koshy, V. (2010). *Action Research for Improving Educational Practice. A Step-by-step guide*. London: Sage Publications.

Kwok, H. H, & Tse C., (2006). *Estimating the Liquidity Premium in the Housing Market.* Mimeo

Leroy, S. F. & Porter R. D. (1981). The Present Value Relation: Tests Based on Implied Variance Bounds. *Econometrica,* 49(3): 555-574.

Lin, Z. & Vandell, K., (2007). Illiquidity and pricing biases in the real estate market. *Real Estate Economics* 35: 291-330.

Malhotra, N. K. (2004) *Marketing research: an applied orientation, 4th edition,* Prentice-Hall International, London.

McMillian, H. & Schumacher, S. (2010). *Research in Education, Evidence Based Inquiry* (7th Edition). New York: Pearson Education Inc.

Nelson, C. R. (1972). *The Term Structure of Interest Rates.* New York: Basic Books.

Roberts, H.V. (1959). Stock-Market Patterns and Financial Analysis: Methodological Suggestions. *Journal of Finance,* 14(1): 1-11.

Rozeff, M. S. (1984). Dividend Yields Are Equity Risk Premiums. *Journal of Portfolio Management,* 68-75.

Shiller, R. (1981). Do Stock Prices Move Too Much To Be Justified By Subsequent in Dividends? *The American Economic Review*, 71(3): 421-436.

Shleifer, A. (2000). *Inefficient Markets: A Introduction to Behavioural Finance*. Oxford: Oxford University Press.

Shleifer, A. (2000). *Inefficient Markets: A Introduction to Behavioural Finance*. Oxford: Oxford University Press.

Tversky, A. & Kahneman, D. (1986). Rational Choice and the Framing of Decisions. *Journal of Business,* forthcoming

Yacin, K. (2010). Market Rationality:  Efficient Market Hypothesis versus Market Anomalies. *European Journal of Economic and Political Studies* 3(2): 23-38.

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