HERDING BEHAVIOUR AND ITS EFFECT ON STOCK MARKET PERFORMANCE IN KENYA

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DECLARATION

This represents my original work and to the best of my knowledge, it has not been presented for any award of degree in any institution.

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This paper has been submitted for examination with our approval as the University Supervisors.

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DEDICATION

To my dear parents for their prayers, unconditional love, and support and for always believing in me.

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I appreciate my siblings; who gave me encouragement and strength through this journey.

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LIST OF ABBREVIATIONS

CAPM   Capital Asset Pricing Model

CMA   Capital Markets Authority

CSAD   Cross Sectional Deviation

ECM   Error Correction Model

EMH   Efficient Market Hypothesis

GDP   Gross Domestic Product

IPO   Initial Public Offer

JB Test   Jarque Bera test

MPT   Modern Portfolio Theory

NSE   Nairobi Security Exchange

ABSTRACT

The study was aimed at finding out the relationship between investor herding and performance of quoted equities in Kenya. The study has three specific objectives which include; to determine the relationship between investor herding, represented by value of shares traded, and performance of the NSE equity market; to determine the relationship between investor herding represented by volume of shares traded, and performance of the stock market; and to try and give recommendations drawn from research findings. The main objective of the study is to provide investors, policy makers and the academic community with knowledge of the relationship between investor sentiment and equity market performance. The study used two proxy measures of investor herding against market capitalization as an indicator of stock market performance. The two proxies for investor herding include the volume of shares traded and value of shares traded. The study is based on Calderon-Rossell (1991) behavioral model of stock market performance and Error Correction Model. Herding measure will be based on the factor sensitivity to volume. To begin we will apply the security market line against the trading volume and value. This study used quarterly time series data for the time from 2010 to 2014. The results indicate that there is a relationship, both long-run and also short run, between the indicators of investor herding and NSE performance. The study therefore recommends that investor confidence in Kenya be developed further to expand market capitalization to minimize the effect of herding.

CHAPTER ONE

INTRODUCTION

1.1   Background of the Study

Traditionally, finance was largely drawn on and around the efficient market hypothesis (EMH) and its applications. It is assumes investor rationality and arbitrage. Fama (1970), defines a market to be efficient if prices always include the complete information in the market i.e past present and future information. Over time, however, the limitations of traditional finance have become increasingly apparent. Investment decision making is not nearly as impartial and intellectually rigorous and financial markets are not always as lucid and efficiently valued as traditional finance assumes (De Long et al., 1990). To bridge this gap between theory and practice, behavioral finance considers the actual pattern of investors' behavior without trying to validate or justify them. It therefore contends that the pessimism or the optimism of investors that is not founded on economic fundamentals affect equity market performance.

Devenow, Welch (1996) tries to explain of the irrational investor's behavior, in that, an investor follows the other investors because he desires to conform to the norm. Also rational view explains that herding behavior arises due to other factors e.g, available information, reputation and compensation issues (Banerjee (1992), Scharfstein, Stein (1990)). Banerjee (1992) posists that investors are influenced by the cost of information acquisition such that they ignore the fundamental value of an asset in order to follow the herd. As a result, it creates and inefficient market.

1.1.1 Herding Behavior

Investors are said to herd when their investment behavior tend to converge to the average even when market information analysis is to the contrary (Hirshleifer and Teoh, 2003). Herding exists when "a group of investors trading in the same direction over a period of time" Nofsinger and Sias (1999).

There exist several theories which try to explain the reasons as to why investors trade in the same direction, commonly referred to as herding. The first theory is that managers may not be comfortable with their own information and thus prefer to herd with others because of fear of acting differently, (Scharfstein and Stein, 1990). Secondly investors may herd in the same direction because they would probably have received the same kind of market information, (Froot, Scharfstein& Stein, 1992; Hirshleifer, Subrahmanyam, & Titman, 1994). Thirdly, investors may rely on their own information from historical trades and herd with others (Bikhchandani, Hirshleifer, and Welch,1992), finally investors may be risk averse to certain stocks, (Falkenstein,1996).

Other explanations as to why existence of investor herding may include the fact that investors may get information from past investors actions, investors may act to the provision of correlated information, institutional and corporate investors may herd for reasons related to compensation, institutional and individual investors may just be irrational and herding sentiment may occur as a consequence of behavioral conventions, Spyrou (2013). Even though there exists an argument stating that herding may result in efficient outcomes, the obvious outcome of herding is inefficient markets. Herding sentiment makes a group of different investors to invest together, causing the stock prices to move away from the

economic realities, leading to price changes and excess fluctuations (Bikhchandani et al. 1992; Nofsinger and Sias 1999). Herding has been identified as the collective irrationality of investors, leading to the mispricing of economic fundamentals (Shiller, 2005).In order to test for herding existence and effect, regression models are used to determine the dispersion of stock returns and performance and how they respond to change in market fundamentals.

1.1.2 Stock Market Performance

Stock market performance is the assessment of an efficient market. Features of an efficient market are numerous participants, perfect information, freedom of entry and exit and homogeneous products. This calls for sufficient value, volume and size of transactions in the market to enable sufficient trading (Yartey and Adjasi, 2007).

We used market capitalization to quantify stock market performance. Stock market capitalization ie expressed as the the total value of all the issued shares of the publically traded companies. It is assumed that market capitalization as a representative of general stock market scope is meaningfully and positively associated with the capacity to rally wealth and spread risk on an economy-wide basis.

1.1.3 Herding Behavior on Stock Market Performance

Modern pricing theory states that, market prices equal fundamental value and asset returns relative exposures to systematic non diversifiable risk. When investors' decision to invest in a particular stock converge, the resultant effect is an increased demand (Nofsinger & Sias, 1999). If such a stock was underpriced to warrant such fray then, according to arbitrage

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pricing theory, supply and demand factors equalize at equilibrium as the stock adjust to correct pricing. Suppose it was just herding, then market supply outnumber the demand when the stock open for trading hence prices will plummet. This will cause both the capital gains and dividend returns to fall sharply. If the stock were overpriced, then all investors will give a wide berth to the stock. When it opens for trading demand will outnumber the supply causing prices to adjust as the market tends to settle at the equilibrium.

Market participants' trade in similar manner regardless of factual analysis and informed predictions. Accumulations of unproductive counters by market participants against expert analysis as well as skewed market return are some of the indications of herded counters. Other indications may include destabilized prices leading to bubble-like episodes in financial markets (Ombai, 2010).Christie and Huang (1995) used CSSD to determine existence of herding in the market.

We quantify investor herding by two indicators which are commonly used by both theoretical and empirical studies. The first indicator is the turnover which is the sum value of traded equities during a given time The second indicator is the volume of shares traded during a given time. Turnover and volume of shares traded are analogous and interrelated in the sense that they both represent the level of interest and amount of liquidity in the stock market. Liquidity measures the rate at which agents can convert quoted equities into purchasing power (Bencivenga et al., 1996; Levine, 1991; Levine and Zervos, 1998). (CSAD), is used to test if herding exists. It is expressed as:- $CSAD_t = \alpha + \gamma_1 + R_{m,t} + \gamma_2 R_{m,t}^2$

1.1.4 Nairobi Securities Exchange (NSE)

The NSE is the institution that is tasked with the responsibility to oversee listing, delisting and regulation of trading of financial securities such as shares. The NSE provides an ideal context for the analysis of investor's behavioral characteristics such as herding. It is one of the most active equity markets in Africa. It was ranked the fourth largest market for quoted equities in Africa in terms of volume of shares traded and fifth in market capitalization.in the year 2011 (Mukulu, 2012). The NSE is also a market for quoted debt instruments and plans to be a market for listed hedge instruments (http://www.nse.co.ke). The NSE share index is a price weighted index. The members are selected based on a weighted market performance and it is updated at the end of every day (My Stocks, 2014). It is a representation of the geometric mean of share prices of the NSE's 20 top stocks.

NSE has experienced unexplained volatile movements in the past where performance of stocks has moved in unexpected from fundamentals.

The NSE has experienced a boom in depth and size; there has been a remarkable growth in the volume of shares traded and positive increase in market participation especially with respect to initial public offers (Matu, 2007). This has led to a steady rise in investors' wealth at the bourse putting some of the investors in exclusive clubs of paper billionaires. Many people see the equity market to be the shortest route to fortune in Kenya (Kithinji and Ngugi, 2010). The significant role played by the equity market in Kenya cannot be overemphasized particularly in the privatization of state owned enterprises (Mukulu, 2012).

1.2 Research Problem

Economic performance is any country is strongly determined and indicated by stock market performance and is an integral part of the economy of any country. Studying the behavioral factors specifically herding is important in order to gain understanding and give explanations for investors decisions and the impact and influence they have on the stock market performance.

Companies quoted on the NSE have been experiencing great volatility price and returns (Kalui, 2004). The daily fluctuation of stock prices seen at the NSE is the main cause of the ills that cause market turbulence. A volatile market will discourage investors from putting their money on the stock market and may lose confidence. This may lead to a very slow uptake of the stock market performance or even a shutdown leading to negative impact on the economy.

Lao and Singh (2010) provided evidence for asymmetric effects of herd behavior patterns. This implies that investors tend to herd more intensively during either an upward movement or a downward movement of the market. Furthermore, it has been suggested that the presence of herd behavior is most likely to occur during periods of extreme market movements, as investors would then be more triggered to follow the market consensus (Chen, Demirer & Kutan, 2010).

Waweru et al. (2008,) surveyed the institutional investors at the NSE. The work investigated the role of behavioral finance and investor psychology in investment decision making. The

study established that behavioral factors affected the decisions of institutional investors operating at the NSE.

Nyamute. W, Lishenga. J, Oloko.M (2015) studied the effect of behavioral factors on portfolio performance at the NSE. They found out that investor behavior has a significant effect on portfolio performance

These observed trends points toward behavioral factors of investor irrationality and raises the question of; does a specific investment behavior exist and does it influence the stock market performance?

1.3   Research Objective

The research focuses on achieving the following objective:

- To determine the existence of herding behavior among institutional investors and its effect stock market performance.

1.4   Value of Study

The study aims to add to the existing literature and will be beneficial to the various parties and make significant contribution to current and potential investors of stocks in the NSE in Kenya, as it will provide a lot of insight on how herding behavior influences their returns and performance of NSE.

The study will open a new field of research and also provoke academicians in further studies and seek to establish other qualitative factors that affect investment decisions of investors. It will therefore suggest areas for further research so that future scholars can pick up these areas and study further. This paper will be an addition to to the national and international body of knowledge in this area and stimulate further research on different aspects of behavioral finance. The study also aims to enlighten policy makers such as government, capital Markets Authority, and NSE management on the effects of herding on future of securities for policy formulations and implementation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature from writers and researchers who have written and/or carried out studies in the same field. The literature review will look at previous studies done in the journals, internet publications, seminar papers, survey reports, and institutional publications and reports. The specific areas covered here are the theoretical review, determinants, empirical review, and conclusion.

2.2 Theoretical Literature Review

The assumption of rational investors and effectual markets has caused traditional finance to gain widespread reception with the academics and investment specialists. Over time, however, the limitations of traditional finance have become increasingly apparent. Investment decision making is not nearly as impartial and intellectually rigorous and financial markets are not always as lucid and efficiently valued as traditional finance assumes (De Long et al., 1990). To bridge this gap between theory and practice, behavioral finance considers the actual pattern of investors' behavior without trying to validate or justify them. It therefore contends that the pessimism or the optimism of investors that is not founded on economic fundamentals affect equity market performance.

2.2.1. Efficient Market Hypothesis (EMH)

Developed by Fama (1970), EMH is based on the notion that people are rational beings whose intention is to maximize returns and process all the available information efficiently, Shiller (1998). Fama (1965) points that in an efficient market, the actual price of a security equals or estimates its intrinsic value. The rationale is that it is not possible to outperform the market because in an efficient market prices will always reflect and incorporate all the existing information (Fama, Fisher, Jensen and Roll, 1969).The proponents of this theory further argue that stocks will most of the time trade at their fair value, hence it is not possible for investors to purchase undervalued or overvalued assets. If stock were to be undervalued, all investors would shift counters, creating more demand .The forces of demand and supply will thus regularize the price to equilibrium.

2.2.2 Behavioral Finance Theory

Behavioral finance is the study of how psychology influences the behavior of investors and the eventual effect on the markets, Sewell, (2007). The behavioral finance theory arose in response to the difficulties faced by the traditional view of efficient markets. In essence, it argues that investment choices are not always made on the basis of full rationality and basically there does not exist any efficient market.

De Long et al. (1990) developed a behavioral finance model that classified investors into rational and irrational investors. They argued that the rational investors are arbitrageurs and are free from sentiments while the irrational investors are prone to market sentiments. Both group of investors compete in the market and all together determine equity market prices.

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However, they point out that rational investors do in practice face limitations to trading. Among the limitations include: the cost of information, the cost of trading, limits to arbitrage and short selling restrictions. Short selling is defined as the selling of investment securities that are rented with the objective of buying them back at a reduced price. Short selling strategy permits an investor to rent another investor's shares and sell them if the expectation is that the stock prices will decrease, purchase them back at the reduced price and return back the shares to the original owner while keeping the difference. Investors who are risk takers also gamble on anticipated stock price increases by borrowing funds to buy shares and sell them at a higher price that will cover the principal and the cost of borrowing. Both strategies can magnify the returns and the losses of the investor because of the underlying leverage.

2.2.3 Modern Portfolio Theory (MPT)

(MPT) was put forward by Harry Markowitz (1952), based on the idea of portfolio optimization to maximize return based on a given level of market risk. It suggests that it is not sufficient to look at the only one stock's risk and return, rather, it is important to invest in portfolio of stocks causing an investor to reap the benefits of diversification due to a reduction in the riskiness of the portfolio. One of the basic assumptions in this revolved around the fact that investor seeks to fully maximize discounted expected returns and variance of returns is undesirable. Variance is a measure of dispersion from the expected. Expected returns can be measured by the yield of the asset while the variance of return is considered as a risk.

The choice of portfolio is separated from beliefs using the expected return-variance of returns rule. Hence, the evaluation of this relationship is the basis of the choice made by investors, thus eliminating decisions made of beliefs. The efficient frontier can be defined as a combination of assets with maximum expected returns that is superior to any other combination and gives the highest level of returns at the lowest level of risk. Return on the portfolio is the weighted sum of expected return of the component assets The theory concludes that diversification provides a superior portfolio. It minimizes the variance with caution being placed on ensuring that the assets don't have a high covariance with each other. Weaknesses in the MPT emerge from the difficulty in estimating the correlation coefficient for two assets. It is even harder for multiple assets which require complex tools, thus it is not practical. In reality, unlimited range of possibilities of investments exists.

2.3 Empirical Literature Review

Commonly cited studies on investor sentiment in the equity markets emerged in the late 1980s. Most of those studies were mainly empirical in nature examining whether the aggregate equity market deviated from its intrinsic or fundamental value. The early researchers were interested to discover whether the equity markets reverted to its mean, whether volatility in the equity market could be explained by changes in the underlying fundamentals and how the equity market performance could be predicted based on its past behavior using traditional valuation ratios (Fama and French, 1989; Campbell and Shiller, 1988). In these pioneer studies, the impact of investor sentimentality in the equity markets did not appear clearly and the empirical results did not report robust associations.

Shiller (1987) conducted a survey on both institutional and individual investors studying their behavior during the equity market crash of 1987. He showed that majority of the investors interpreted the equity market crash as being caused by the psychology of other investors instead of changes in the fundamental factors such as profitability or changes in interest rates. Also Siegel (1992) found that a decrease or increase of corporate profits and the rate of interest could not explain the increase and the eventual collapse of the equity market prices in the year 1987. He suggested that a change in investor sentiment was the main suspect in triggering the equity market collapse.

The application of the behavioral finance models started with studies investigating the relationship between equity market prices and macroeconomic variables. Cutler et al. (1991) investigated changes in equity prices in relation to new information on macroeconomic indicators. They found that new information on macroeconomic indicators could only explain a third of the changes in equity market returns. They also found that news such as news on wars or on changes in financial regulatory regimes or on changes in economic policies explain in part but not all of the changes in equity market returns. The findings in this study have strong similarities to those found by Shiller (2000) who reported that fluctuations of equity market prices are higher than the equity market prices predicted by the changes of economic fundamentals. The findings of these studies (Cutler et al., 1991; Shiller, 2000) reveal that equity market prices are influenced by much more than fundamental factors. This leaves a room for the role of investor sentiment in equity markets.

Mwimali (2012) studied the existence of herd behavior: evidence from the Nairobi Securities Exchange. This study focused on the price implications of herding by looking into how equity returns reflect the exixtence of herd behavior. The objective of the study

was to determine the existence of herding behavior among the investors at NSE. The study entailed an empirical research design. Data used was secondary data obtained from the Nairobi securities exchange. Data was analyzed using Christie and Huang (1995) model, where a regression analysis was on CSSD against dummy variables to determine the beta coefficients in the market. The regression produced statistically significant positive beta coefficients which reveal no presence of herding behavior among investors at the NSE. In conclusion there is evidence of existence of herding, however herding was not found to be an important determinant of equity returns during periods of price fluctuations in the market.

Baker and Wurgler (2006) studied some measures of investor sentiment extracted from various academic literature: namely; trading volume as measured by number of shares traded; premium on dividend paying stocks; discounts on closed - ended funds, the amount of IPOs and their first day returns and the share of new equity offers. They discovered empirical proof that exhibited volume of shares traded, number of IPOs and their first day returns and the share in new equity issues positively associate with investor sentiment surveys.

Other studies using equity market transaction data also exist. Saar and Titman (2008) studied trading behavior of individual investor's data from the New York Stock. They found that the trades of investors in the equity market can be used to forecast future equity market performance .A disadvantage of the studies based on market data is disentanglement problem. Disentanglement is the separation of passive investor transactions from active investor transactions. Passive investors make investments with the purpose of long term capital appreciation and restricted maintenance. As a consequence, they do not influence the liquidity of the equity market on a regular basis. It is noted that disentanglement is also

a problem in this study since there is no available data at the NSE that separates passive investor transactions from the active investor transactions. However, it is not likely to be a major disruptive factor as we are focused on the cumulative effects of sentiment on the aggregate NSE equity market.

Werah (2006) carried a study titled the effect of behavioral factors on investment decisions at NSE. The study set out to survey the influences of behavior on investor decisions, specifically imploring the role played by behavioral factors on investors' decisions. Behavioral finance provided the fundamental theoretical framework for this study. To achieve the objective, primary data was collected from individual and institutional investors who trade at the NSE through questionnaires, while secondary data used are documented studies and other literature in behavioral finance developed mostly in advanced markets. The results obtained suggest that the behavior of investment market participants was to some extent irrational. However, the traditional investment influencing factors of risk and return are still having more influence on investor decisions than the behavioral factors.

2.4 Literature Review Overview

From the literature, it was evident that most of the studies were done in the developed world with very little having been carried out in Africa and particularly in Kenya. Further, the studies that have been done locally have focused on the general behavioral finance factors without narrowing down to any particular factor as having a big influence on stock market returns and performance. A study on behavioral finance in Kenya by Werah(2006) established the presence of herd behavior, fear of regret, overconfidence and anchoring as factors influencing NSE investors, while Mbaluka (2008) study focused on psychological

aspect. Further Nyaribo (2010) centered on overconfidence, frame dependence, anchoring, mental accounting and representativeness. As such the above studies had not adequately addressed the herding effect influence on stock market performance.

Nyamute, Lishenga, Oloko (2015) did a study to investigate the effect of investor behavior on portfolio performance at the NSE. The study found out that investor behavior does influence portfolio performance. Although herding was found to have a positive effect on performance, it will also requires a good cue for an investor to herd and gain sufficient returns.

As such the findings from this study on the effect of herding behavior among institutional investors on the NSE and their subsequent impact on performance of NSE will form a crucial body of knowledge in the field of behavioral finance in the Kenyan context.

2.5. Conceptual Framework

The focus of this research is the relationships among investors herding and performance of the stock market. Stock performance is the dependent variable in this study. We used market capitalization to quantify NSE equity market performance. The independent variable is investor behavior which is herding. Herding behavior in equity market is identified as tendency of investors' behaviors to follow each other's others actions. Herding is the explanatory variable of interest in this study. We quantify investor herding by two indicators which are commonly used by both theoretical and empirical studies. The first indicator is the turnover which is the total value of traded shares during a given time period. The second indicator is the volume of shares traded defined as the total number of shares traded during

a given time period. Turnover and volume of shares traded are analogous and interrelated in the sense that they both represent the level of interest and amount of liquidity in the stock market. Cross sectional absolute deviation of returns (CSAD), is used to investigate the existence of herding behavior. It based on findings of Christie and Huang and Chang et al., which is the following:- $CSAD_t = \alpha + \gamma 1 + R_m, t + \gamma 2 R_m, t2$

The academic basis of this study is based on Calderon-Rossell (1991) behavioral model of stock market performance.The methodology is based two proxy measures of investor herding against market capitalization as an indicator of stock market performance. The two proxies for investor herding include the volume of shares traded and value of shares traded. Herding measure will be based on the factor sensitivity to volume.

2.6 Research Hypotheses

This study sought to establish the relationships among investor herding behavior, and stock market performance. Based on the research gaps that exist on the relationships among the study variables and the objectives of this study, we will test the following hypothesis:

H1: Herding affects stock market performance

H2: Herding does not affect stock market performance.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodologies, which will be adopted when addressing the study objective. It presents a detailed analysis of how the study was conducted and presents the plan for conducting the reseach, the research design, data collection methods and sources and the data analysis technique adopted to analyze the data in order to generate findings of the study.

3.2 Research Design

This study used descriptive survey design. This kind of research study was preferred since it has the dimension of investigating possible relationships between two or more variables (Mugenda and Mugenda, 2003). The descriptive survey design was ideal since it is concerned with making accurate assessment of the inference, distribution and relationship of the phenomenon (Edwards, 2006).

This study sought to establish relationship between investor herding behaviour, and stock market performance. A descriptive design was seen to be appropriate to use for collecting data to determine the linkages between the study variables over period. This was because we were investigating events that had already happened thus have no control over variables.

3.3 Population

Population of the study comprised of all the 43,463 institutional investors at the NSE based on the capital markets bulletin (CMA) – Q1/2016.

3.4 Sample

The sample of the study consisted of the 20 institutional investors that invest at NSE, selected randomly on convenient bases.

3.5 Data Collection

The study used quarterly time series data for the period starting January 2010 to December 2014. The data analyzed was obtained from the NSE and the published economic surveys. Data on stock market performance will be obtained from CMA quarterly bulletins. Market performance is our dependent variable of the study. The quantity and volume of shares traded by investors in the same direction will also be obtained from NSE and CMA quarterly bulletins. Quantity and value of shares are the proxy variables for herding in our study. Herding is the independent variable of our study equation.

3.6 Data Analysis

The academic basis of this study is based on Calderon-Rossell (1991) behavioral model of stock market performance. In the model, market capitalization is defined as follows:

$MC = NV$

Where:

MC = Market capitalization

N = Number of quoted companies in the equity market

V = Average value of quoted companies

Our methodology is based two proxy measures of investor herding against market capitalization as an indicator of stock market performance. The two proxies for investor herding include the volume of shares traded and value of shares traded. Herding measure will be based on the factor sensitivity to volume. To begin we will apply the security market line against the trading volume which can be expressed as:

$V\ i = \alpha i + \beta i\ Vm + \varepsilon i.$

Where: $V\ i$ = security trading volume i ,

$V\ m$ = market trading volume.

Where herding exists, there is an extreme irrational change of the investors' behaviour and beliefs in order to follow and act in the same direction as other investors towards the market portfolio. This affects the equilibrium relationship and leads to betas and the stock trading volumes to become biased. Then, in equilibrium we write: $V_{i,t} = \beta_{i,\ m,\ t} * V_{m,t}$. Where:

$Vi, = t$ volume of stock i at time t ,

$Vm =, t$ volume of market at time t.

Where herding exists towards the market portfolio, the relationship between the equilibrium beta ($\beta i,\ m,\ t$) and its behaviourally biased equivalent, is the following: ,

$V_i^b{}_t / V^b{}_{mt} = \beta^b{}_{i,\ m,\ t} - h_{\ m,\ t}\ (\beta_{i,\ m\ ,t} - 1)$

Where: $V_i^b{}_t$: herding biased volume of security *i* on period *t*.

$V^b{}_{mt}$: herding biased volume of market at time *t*.

$h_{m,t}$ is a time variant herding parameter (,$h_{m\ ,t} \leq 1$).

Where, h_{mt} *is equal to* 0 and $\beta^b{}_{imt}$ is equal to $= \beta_{imt}$ Means that herding is nonexistent.

Where, $h_{m\,t\,is\,equal\,to} = \beta^b_{imt\,-=\,1}$, means that there exist herding in the market

Where, some herding exists, it is examined by the magnitude of h_{mt}

The equation is expanded as follows;

Let, $\delta\,m\,t$ and, δit represent herding and asset i respectively. Then the investor's irrational expectation in the presence of herding is:

$V^b_{i\,t} = V_{it\,+}\,\delta\,it\,and\,V^b_{m\,t} = V_{m\,t\,+}\,\delta\,m\,t$

We therefore have;

$\beta^b_{i,m,t} = \{\,\beta_{i,m,t\,+}\,\delta it\}\,/\,\{1+\,\delta mt\,\}$

Where $= \delta mt$ and δit represent herding in the market and asset i relative to the market trading volume.

So, the degree of beta herding is given by:

$Hm,t = 1/_N \sum^{Nt} \{\,\beta^b_{i,m,t} - 1\}^2$

Where ^{Nt} is the number. of stocks at time t

The relationship of the variables used in the study can be explained by considering the following model; $MC = \alpha + \beta1Hm,t + \mu$

Where; MC represents stock performance, which is the market Capitalization of the NSE equity market where;α represents the intercept form.

Hm,t represents herding at time t.

μ shows the error term.

Hence, we estimated the following model:

Log MCt = $\beta0 + \beta1$ log Herding t + ε..(2)

Where:$\beta0$=Intercept form

MCt = Market Capitalization of the NSE equity market

Herdingt =Investor Herding in the NSE equity market which is a factor of volume traded and value traded.

ε = the Error Term

3.7 Operationalization of Study Variables

3.7.1 Stock Market Performance

The dependent variable of this study is the NSE equity market performance. We used market capitalization to quantify NSE equity market performance. Equity market capitalization ie expressed as the the total value of all the issued shares of the publically traded companies. It is assumed that market capitalization as a representative of general stock market scope is meaningfully and positively associated with the capacity to rally wealth and spread risk on an economy-wide basis.

3.8.2 Herding

Herding is the explanatory variable of interest in this study. We quantify investor herding by two indicators which are commonly used by both theoretical and empirical studies. The first indicator is the turnover which is the sum value of traded equities during a given time The second indicator is the volume of shares traded which is also the total number of shares traded during a given time.

Turnover and volume of shares traded are analogous and interrelated in the sense that they both represent the level of interest and amount of liquidity in the stock market. Liquidity measures the rate at which agents can convert quoted equities into purchasing power (Bencivenga et al., 1996; Levine, 1991; Levine and Zervos, 1998). (CSAD), is used to test if herding exists. It is expressed as:- CSADt = $\alpha+\gamma1+Rm, t+\gamma2Rm, t2$

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

The chapter presents results from the empirical estimation and gives the economic interpretations of the results. It includes the descriptive statistics of the variables in the estimated model, the co-integration test results, the error-correction, the post-estimation diagnostics and discussion of the results.

4.2 Descriptive Data Analysis

Descriptive data analysis was done to ascertain the data's statistical properties in order to give the statistical model estimated a suitable mathematical and functional form. Table I below shows the skewness', kurtosis. Mean, standard deviation, of all the model variables specified in the equation 2 above. The study used STATA statistical program to establish whether a statistically significant relationship exists between the measures of investor sentiment and the performance of the NSE equity market, while controlling for other factors.

Table I: Descriptive Data Analysis

Variables	Mean	Std Dev	Skeweness	Kurtosis
In MCt	26.5	1.0	0.1	1.3
In Vol traded$t$	18.2	1.7	0.2	1.8
In Value traded$t$	21.5	1.6	-0.01	1.8

Source: Author's own computation with Stata 12

Table I suggests that, all the natural logarithms of variables are not dispersed so far away from their mean values as seen from the small standard deviation values. A normally distributed data should have skewness of zero. The variables have positive skewness which indicates that the data is skewed to the right which suggests that the right tail is long relative to the left tail. The kurtosis of all the variables is positive indicating a peaked distribution.

4.3 Graphical Data Analysis

An analysis of the data was done so as to detect the movement in the value of the variables over a given time and also to analyze the causes of such movements.

Figure II: Trend of the of Market Capitalization
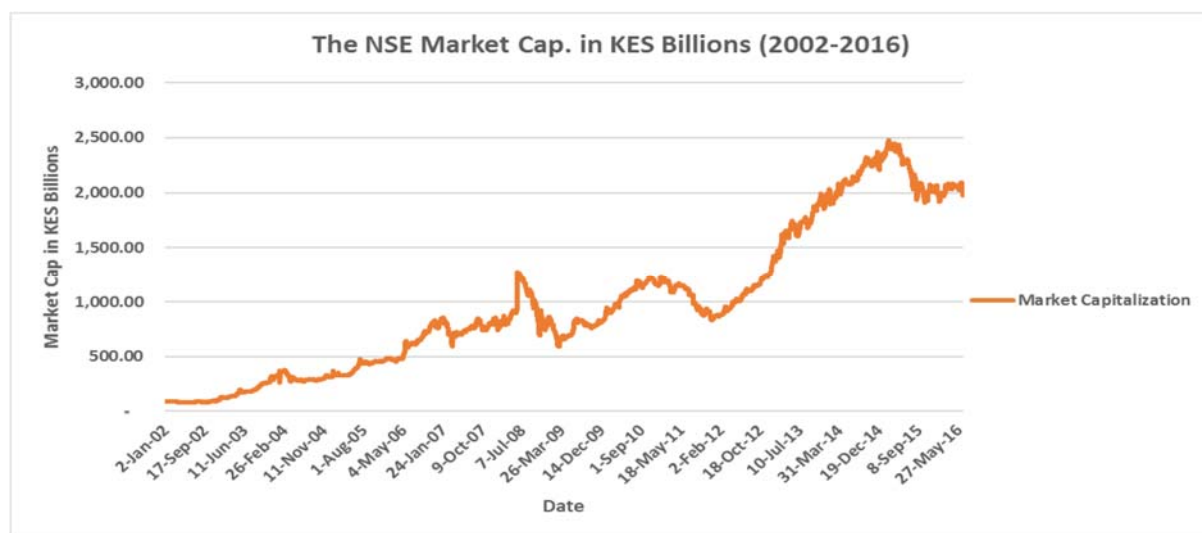
Figure II shows the movements in market capitalization of the NSE equity market from the first quarter of 2002 to the first two quarters of 2016. The figure illustrates that the market capitalization has been increasing over time. It rose from the 2nd quarter of 2002 to 2nd quarter of 2007. However, the trend has been oscillating but with an upward trend.

Figure III: Trend of the Volume of shares traded

Trend of Volume of Shares traded in millions
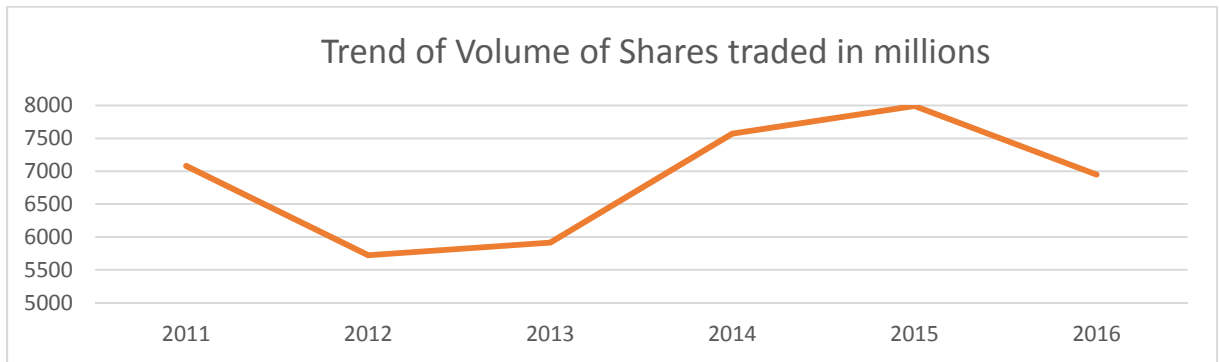
Figure III above illustrates the movement of the volume of shares traded from the first 2010 to 2015. The figure suggests that the volume of shares traded has an upward trend movement oscillation.

Figure IV: Trend of the Value of shares traded

Trend of Value of Shares traded in billions
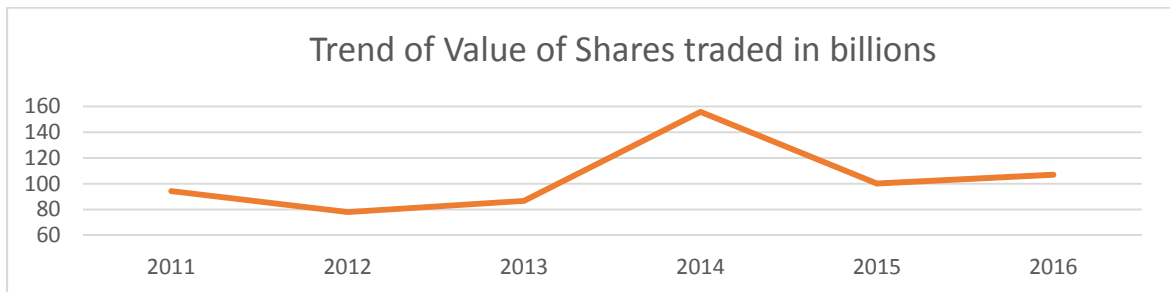
Figure IV above illustrates the movement of the value of shares traded from 2010 to 2016. The figure suggests that the volume of shares traded has an upward trend movement oscillation but a bit flatter peaks than the one for volume trend.

Figure V: Trend of the NSE 20 share Index
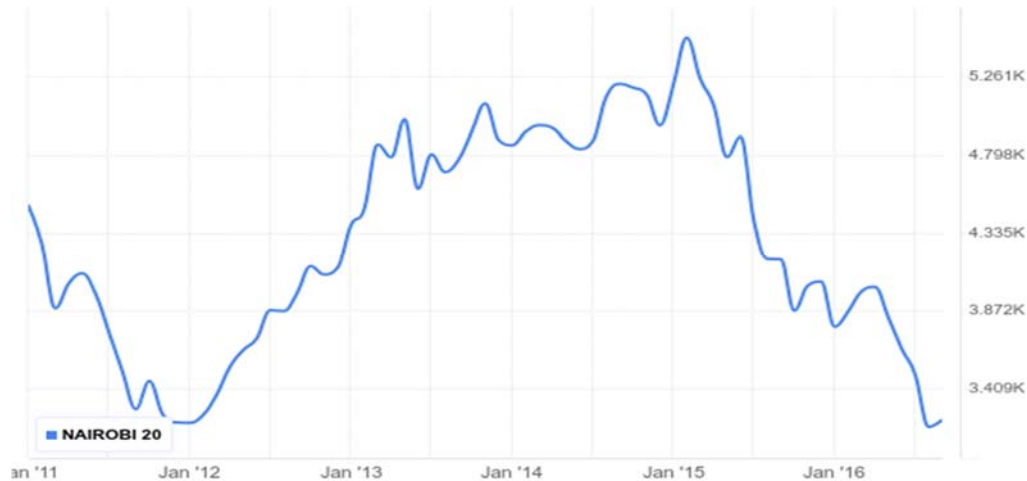
The graphical presentation of the variables revealed an upward trend in most of the variables apart from the NSE 20-share Index which has not shown any particular trend. However, trend of volume and value of shares traded showed a trend which is not smooth. It implies that these variables are sensitive to shocks. In some years volume and value of shares traded shot-up rather quickly and this could have been as a result of the negative sentiments amongst the investors who resorted into panic selling. This explains the possible shoot-up of the turnover and total volume of shares traded at the NSE during this period. In February 2016, the trend movement of the volume and value of shares traded declined sharply. This is attributed to the run-away sentiments following the global financial crisis. During this period, investors largely kept out of the market as there were no enough buyers to support the market and hence stock prices dipped as reflected in the trend of market capitalization in figure I.

Table VI below shows herding behavior is significant for main variables of the equity prices dynamics i.e performance, value, volume and volatility.

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Figure VI: **Relationship between herding and return**

	Coefficient estimate		Student test		Residual Normality		
	Alpha	Beta	t alpha	t beta	Skewness	Kurtosis	Jarque Bera
R m, t	-0.02	5	-1.8	2.5	-0.4	3.4	2.8
V m, t	0	0.1	23.2	5.2	0.1	2.8	0.2
Vol m, t	0	-0.2	15.0	-6.8	1.8	6.3	79.4

The Jarque-Bera test is a goodness of fit test of whether the sample data have the skewness and kurtosis matching a normal distribution. The JB statistics show that the data is normally distributed.

Table VII: NSE 20 Share Index Descriptive Statistics

Measure	Value2
Maximum	5,800
Minimum	1,000
Median	3,900
Mean	0.1
Std dev	0.1
Skewness	0.4
Kurtosis	1.2
Variance	0.01

Table VII summarizes relevant information on the empirical distributions of equity returns under consideration. The statistics reported are the skewness, kurtosis, mean, standard deviation, minimum, and maximum return during the sample period.

Table VII shows data for the period between 2011 to 2014, average composite returns was 0.1 and standard deviation was 0.1. The variance was 0.01, the highest points the index achieved was 5800 and the lowest being 1000 points.

Table VIII: Descriptive Statistics of NSE Index Composite Returns. (Ri, t) 2011-2014

Company	Mean	Std Dev	Skewness	Kurtosis	Variance
Sasini Ltd	0.05	0.07	1.41	1.55	0
Barclays Bank Ltd	0.05	0.1	1.67	3.66	0.01
CFC Stanbic Holdings Ltd	0.21	0.04	1.7	3.81	0.14
Equity Bank Ltd Ord	0.27	0.24	0.89	-3	0.09
Kenya Commercial Bank Ltd	0.36	0.61	1.64	2.31	0.25
Standard Chartered Bank Ltd	0.1	0.11	1.27	-4.35	0.01
Co-operative Bank of Kenya Ltd	0.08	0.05	-1.73	2.64	0.01
Kenya Airways Ltd	-0.06	0.93	1.05	2.22	0.58
Nation Media Group	0.27	0.64	1.63	3.57	0.33
Scan group Ltd	-0.05	0.02	1.72	3.65	0.01
ARM Cement Ltd	-0.06	0.38	-0.2	0.41	0.11
Bamburi Cement Ltd	-0.03	0.1	-0.92	-1.67	0.02
Ken Gen Ltd	-0.06	0.28	-1.01	-3.37	0.06
Kenol Kobil Ltd	-0.03	0.06	1.13	2.1	0.02
Kenya Power & Lighting Co Ltd	-0.11	0.19	-1.71	1.71	0.03
British-American Investments Ltd	0.52	0.53	1.73	-5.34	0.37
Centum Investment Co Ltd	0.37	0.29	1.33	-0.44	0.26
British American Tobacco Kenya	0.47	0.77	1.73	0.43	0.4
East African Breweries Ltd	0.12	0.23	1.7	3.55	0.04
Safaricom Ltd Ord	0.31	0.5	1.4	-2	0.18

*****Source: Ayuko Siloya, D (2014),*

4.4 Correlation Analysis

Having established that the variables (Volume and Value) included, are integrated in the same order, the next procedure involves testing the possibility of co-integration among the variables used. If the residuals are stationary then it means that the independent and dependent variables are co-integrating. If the variables under investigation are found cointegrated, there exists a long-run and equilibrium relationship between the variables. In presence of co-integration, the theorem of Engle–Granger (1987) can be used to show an error correction model (ECM) to reconcile the short run and long run behavior of the variables. Table below shows the results of the co - integration test.

Variables	Trends	Test Statistics	1% critical value	5% critical value	10% critical value	p- Value
Residuals	Trend	-3.3	-4.1	-3.5	-3.2	0.1
Residuals	No Trend	-3.3	-3.6	-2.9	-2.6	0.01

Source: Author's own computation with Stata 12

The results presented in Table show that the ordinary least square residuals without a trend are stationary at 5% and 10% critical values and the p-value of 0.01 is less than the 0.1 significance level. Therefore, the variables in the model are co-integrated, indicating a long-run relationship between measures of equity proxy variables of investor sentiment and the performance of quoted equities in Kenya, represented by market capitalization.

Estimating a model with non-stationary variables could lead to spurious regression. To solve for non-stationarity, the variables are first differenced and then the short-run relationship is estimated. But estimating a model with first differenced variables leads to a loss of long-run information. Therefore, an error-correction model is used to bridge both the long-run and shortrun relationships within the context of a single equation. Table 4.4 presents the error correction models estimations.

Table 4.4: Error-Correction Model Estimates

Variables	Coefficient	Std Error	T statistic	P value
LDlnMCt	0.2008883	0.3274469	0.61	0.054
LDlnVoltradedt	0.1027177	0.0548223	1.87	0.066
LDlnValuetradedt	0.1155889	0.0578	2.00	0.050
LECM	-0.453873	0.2585926	-1.18	0.035
Constant	0.0302671	0.017993	1.68	0.098

Source: Author's computation with Stata 12

Table 4.4 shows that the volume of shares traded on its part has a positive and significant effect on market capitalization at the 10% level. Similarly, the value of shares traded variable exerts a positive and significant effect on market capitalization at the 5% level. The error-correction term shows that 45% of the errors are corrected each period and its impact

is statistically significant. This is a reasonable result to enable the study conclude that volume and value of shares traded as proxy measures of investor sentiment predict the variations in market capitalization as an indicator of equity market performance. The F-statistics shows that the estimated parameters are jointly significantly different from zero.

4.5 Interpretation of Findings and Discussions

The study sought to answer the question: what effect does investor herding have in the performance of quoted equities in Kenya. The test revealed that the proxy variables representing herding are co-integrated suggesting a long run relationship between herding sentiment (volume and value of shares traded) and performance of quoted equities in Kenya. The error-correction model estimates show that the volume of shares traded and value of shares traded have a positive and significant impact on market capitalization. Liquid stock markets are said to enable investors modify their portfolios quickly. According to Bencivenga et al., 1996; Levine, 1991; Levine and Zervos, 1998 it facilitates investment projects and makes them less risky. Therefore, the empirical results are consistent with the prior expectation that volume and value of shares traded have a significant impact on equity market capitalization since more investor savings are invested through the equity markets when they are liquid.

We anticipated herding which is presented by value and volume of shares traded to be an important behavioral determinant of equity market capitalization of which the result holds. Concerning our formula equations, we note that there is positive relationship between market returns and performance and the trading volume when herding exists. Our results of our formula show that large trading volumes are crucial to existence of herding behavior

among investors. This result shows that herding leads a great movement of investors on one side of the market (Schwert and Seguin (1993)), we find negative beta implying that when herding phenomenon exists, the volatility is excessively low

We carried an F test, to test correctness of the relationship between the variables. The F test showed a skewness which is positive explaining why the volatility and trading volume for the residuals is characterized by slope towards the left. F test shows negative skewness for return, characterized by a slope towards the right. A high kurtosis indicates strong probability of extreme points. The returns residuals are explained by proportionally low flatness while those of volatility reveal strong flatness which gives higher JB.Chow test reveals that the relation between herding behavior and market performance lacks of stability.

From the tests we can conclude that at first the relationship between herding behavior and performance shows non stability at the aggregated level while the results of normality test reveal an asymmetry phenomenon that indicates a presence of non-linearity. So, we can advance three propositions in order to study the causes of non-stability but for this study we will not. However we recommend a study to check the causes of non-stability.

Herding behavior and market performance relationship will most of the time differ according to structural data used in the study. So the non-stability can only disappear if we study this relation in the level of individual stocks and we can also check the impact of several criteria on this relation like: book to market value, activity sector, liquidity criteria and size.

These finding is also consistent with the finding of Ombai (2010) who in his study investigating herding effect at the NSE during global financial crisis found evidence of herding among investor at NSE who observed a negatively significant y2 coefficient. And the findings of Kahuthu (2011) whose study on effects of herd behavior on trading volume and prices at the Nairobi Securities exchange observed that shown that herd instinct behavior among investors have a direct effect on stocks traded stock prices. Finally, the findings of Kimani (2011) who listed herding as among the behavioral factors that affect investment decisions of individual investors at the NSE are also contradicted by the findings of this study.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATION.

5.1 Introduction

This chapter provides a summary of findings, conclusions, recommendations, limitations and areas for further research.

5.2 Summary of the Study

The research examined the relationship between investor herding and stock market performance using quarterly data for the period between 2010 and 2014 which was extended at convenient basis. Two proxy variables used to measure investor herding included the volume of shares traded and value of shares traded. Market capitalization was used as an indicator of equity market performance. The study used pre-estimation tests such as statistical, descriptive, graphical analyses and also examined the properties of the underlying data using the ADF test and Error Correction model to check whether the data contained a unit root.

Concerning our formula equations, we note that there is positive relationship between market returns and performance and the trading volume when herding exists. Our results of our formula show that large trading volumes are crucial to existence of herding behavior among investors. The F test showed a skewness which is positive explaining why the volatility and trading volume for the residuals is characterized by slope towards the left. F

test shows negative skewness for performance, characterized by a slope towards the right. A high kurtosis indicates strong probability of extreme points. The returns residuals are explained by proportionally low flatness while those of volatility reveal strong flatness which gives higher JB.Chow test reveals that the relation between herding behavior and market performance lacks of stability.

Co-integration test showed that the variables of the model are co-integrated, indicating a long-run relationship between measures of investor herding and the performance of quoted equities in Kenya. The model was estimated using error-correction model and the results show that the one period lag of market capitalization, volume of shares traded, value of shares traded and the NSE 20-share Index variables exert a statistical effect on market capitalization.

5.3 Conclusions

The empirical results from the research concludes that there is a significant relationship between investor herding and performance of quoted equities in Kenya. Put in another way, the bullishness or bearishness of market participants is not founded only on economic fundamentals and has been found to have a significant relationship with the performance of NSE equity market. This relationship between market capitalization and the measures of herding are positive. The study found that the two proxy variables for investor sentiment which include the volume of shares traded and value of shares traded have a positive and significant relationship with market capitalization.

We anticipated herding which is presented by value and volume of shares traded to be an important behavioral determinant of equity market capitalization of which the result holds. From the tests we can conclude that at first the relationship between herding behavior and performance shows non stability at the aggregated level while the results of normality test reveal an asymmetry phenomenon that indicates a presence of non-linearity. So, we can advance three propositions in order to study the causes of non-stability but for this study we will not. However we recommend a study to check the causes of non-stability.

Our results shows that herding leads a great movement of investors on one side of the market (Schwert and Seguin (1993)), we find negative beta implying that when herding phenomenon exists, the volatility is excessively low

These findings are also consistent with the finding of Ombai (2010) who in his study investigating herding effect at the NSE during global financial crisis found evidence of herding among investor at NSE who observed a negatively significant y2 coefficient. And the findings of Kahuthu (2011) whose study on effects of herd behavior on trading volume and prices at the Nairobi Securities exchange observed that shown that herd instinct behavior among investors have a direct effect on stocks traded stock prices. Finally, the findings of Kimani (2011) who listed herding as among the behavioral factors that affect investment decisions of individual investors at the NSE are also contradicted by the findings of this study.

5.4 Limitations of the Study

This research used quarterly secondary time series data which was marked with unique set of problems in terms of collection, processing procedures and analysis. There were cases of missing values.

It was also completely difficult to analyse herding per individual stock. Approximate values needed to be used in such instances and this may have compromised the accuracy and quality of the data, thus we decided to look into the market as a whole and not individual stocks.

The study used financial variables as proxy measures of investor herding. Despite relying on a theory to relate the financial variables to investor herding, the correct herding of market participants over the period under study may not have been well captured.

Moreover, herding is said to be an animal spirit and therefore there is no consensus in the literature on how best to measure it. This challenge was also compounded by the fact that there are no direct surveys or index to measure investor herding in Kenya.

Finally this study needed to be completed within a short time frame thus there was pressure to complete the work and might have made errors in the process of the study.

5.5 Recommendations

5.5.1 Policy Recommendations

It is important for the government of Kenya and the capital market stakeholders to strengthen institutions of corporate governance for the market intermediaries. Public confidence should be fostered and informational efficiency improved with appropriate disclosure rules, accounting standards and contracts enforceability that is consistent with international best practices.

The NSE and other relevant stakeholders need to increase the number of listed companies to improve market capitalization. Provision of incentives for listing on the securities exchange as a means to achieve greater market depth and trading activity is recommended. These should include tax and fiscal incentives. International road shows should be arranged by the market players to boost awareness of these incentives.

Policy makers should come up with policies that will ensure improved efficiency, lower transaction costs and increase liquidity in the market. This is because there is positive and significant relationship between value of shares traded and stock market performance. The same policy will improve volume of trading which has also a positive and significant relationship with stock market performance.

In this study, the economy also drives the growth of the stock market. Economic growth plays a significant role in the performance of the NSE equity market. Therefore, policy makers in Kenya may initiate policies that foster economic growth. In sum, the study emphasizes on the adoption of policies that will boost the confidence of market participants

and recommends enforcement of stricter and flexible regulatory regime by the Capital Markets Authority to improve market efficiency.

5.5.2 Suggestions for Further Research

Further research should be undertaken towards the exact mechanism by which it influences performance of individual stocks. In this regard, further studies should include other measures of investor sentiment used in the literature such as direct polling of investors, advance decline ratios and warrant trades among other indicators.

There is also need for a further research on the determinants of herding in Kenya and how it may relate to the stock prices of the specific companies quoted at the NSE. A panel data analysis needs to be carried out in this area in future.

Different models give different results. We recommend a study to investigate the cause of the different results and its effect on stock performance and investor decision making.

We also recommend a similar study to be carried out within a smaller scale of investors and within adequate timelines so as to provide accurate results.

REFERENCES:

Ayuko Siloya, D (2014), The Effect of Herding on Stock Returns At The Nairobi Securities
      Exchange *A published MBA Research Paper University of Nairobi*

Banerjee, A. (1992), A simple model of Herd Behavior. *Quarterly Journal of Economics, 107, 797-817.*

Bikhchandani, S., Sharma, S. (2001). Herd Behavior in Financial Markets. IMF Staff Papers,
      International Monetary Fund, 47(3), 279–310.'

Bikhchandani, S., Hirshleifer, D., Welch, I. (1992).A theory of fads, fashion, custom and cultural
      change as informational cascades. *Journal of Political Economy, 100, 992–1026.*

Calderon-Rossell, R. (1991). The determinants of stock market growth. In S. G. Rhee and R. P.
      Chang (Eds.), Pacific Basin Capital Markets Research Proceeding of The Second Annual
      Pacific Basin Finance Conference, 2, 4–6 June, Bangkok, Thailand.

Chang, E.C., Cheng, J.W., Khorana, A. (2000) An examination of herd behavior in equity markets:
      an international perspective, *Journal of Banking and Finance*, 24, 1651–1679.

Chiang, T.C., Zheng, D. (2010), an Empirical Analysis of Herd Behavior in Global Stock
      Markets.Journal of Banking and Finance, 34, 1911–1921.

Choi**, N.**,Sias, R. (2009) .Institutional Industry Herding. *Journal of Financial Economics, 94, 469-491.*

Christie, W.G., Huang, R. D. (1995). Following the Pied Piper: Do Individual Returns Herd around
      the Market? *Financial Analysts Journal, 31-37.*

Demirer, R., Kutan, A.M. (2006). Does herding behavior exist in Chinese stock markets? *Journal of
      International Financial Markets, Institutions and Money**,16,123–142*.

Devenow, A., Welch, I. (1996), Rational Herding in Financial Economics. *European Economic
      Review, 40, 603–615.*

Fama, F. Eugene, Market Effciency, Long-Term Returns, and Behavioural Finance, *Journal of
      Financial Economics*, **49**(3), (1998), 283.

Hirshleifer, D.,Teoh, S. H. (2003), Herd Behaviour and Cascading in Capital Markets. *Review and
      Synthesis, European Financial Management, 1(9), 25–66.*

Hirshleifer, D. (2001), Investor psychology and asset pricing. *Journal of Finance, 56, 1533-1597.*

Hott .C. (2009).Herding Behavior in Asset Markets, *Journal of Financial Stability, 5, 35–56.*

Hwang, S. and Salmon, M. (2004*) .*Market stress and herding, *Journal of Empirical Finance, 11,
      585-616.*

Kim, K., Sias, J. (2005). Institutional herding, business groups and economic regimes: Evidence from Japan, *Journal of Business, 78, 213–242*

Mohamed H, Abdullahi (2012). Investor Sentiment and equity markets: Evidence From Kenya

N. Barberis and R. Thaler, A Survey of Behavioural Finance, *National Bureau of Economic Research*, (2002), http:www.nber.org/papers.

Nizar H. (2010), New Sight of Herding Behaviour through Trading Volume

Nofsinger, J., Sias, R. (1999). Herding and Feedback Trading by Institutional and Individual Investors. *Journal of Finance, 54, 2263-2295*.

Nyamute W., Lishenga J., Oloko M.,(2015) The Relationship Between Investor Behavior and Portfolio Performance at the Nairobi Secuirties Exchange. *International Journal of Multidisciplinary research and Development*, *548 - 551*.

Scharfstein, D., Stein, J., (1990). Herd behavior and investment. *American Economic Review, 80, 465–479.*

Shiller, R.J. (2002).From efficient market theory to behavioral finance.*Cowles Foundation, Yale University.Discussion Papers 1385.*

Sias, R. (2004). Institutional herding. Review of Financial Studies, 17, 165–206.

Sias, R., Starks, L., Titman, S. (2007), The price impact of institutional trading. Available at http://ssrn.com/abstract=283779.

Tan, L., Chiang, T.C., Mason, J.R.,Nelling, E. (2008).Herding behavior in Chinese stock markets: An examination of A and B shares, Pacific-Basin. *Finance Journal, 16, 61–77.*

Uyen, M. Le (2014), An Exploratory Study of Herd Behaviour in Vietnamese Stock Market: A New Method

Werner F.M. De Bondt and Richard H. Thaler, Does the Stock Market Overreact?, *A Journal of Finance*, **40**(3), (1985),793-805.

APPENDICIES

APPENDIX I: NSE MARKET STATISTICS 2010 - 2014

Month	Equity Turn over (Kshs Bn)	Share Volume (Kshs Mn)	NSE 20 Share Index	Average Market Capitalization (Kshs Bn)
2010				
January	6	604	3565	910
February	4	370	3629	922
March	7	526	3933	962
April	7	399	4233	1062
May	10	934	4242	1073
June	7	365	4339	1109
July	11	691	4438	1143
August	16	1030	4454	1136
September	8	804	4629	1174
October	10	501	4659	1222
November	9	499	4395	1169
December	6	358	4433	1167
2011				
January	10	725	4465	1192
February	6	335	4240	1177
March	8	469	3887	1090
April	8	497	4029	1155
May	8	411	4078	1144
June	7	411	3968	1121
July	7	434	3738	1050
August	6	552	3465	950
September	6	582	3284	885
October	5	570	3501	927
November	4	399	3155	855
December	4	337	3205	868
2012				
January	4	351	3224	880
February	4	342	3304	920
March	6	366	3367	941
April	8	528	3547	985
May	9	544	3651	1001
June	6	386	3704	1049
July	6	384	3832	1099
August	6	339	3866	1117
September	10	470	3972	1147
October	11	917	4147	1117
November	11	827	4083	1250
December	8	462	4133	1272
2013				
January	9	519	4417	1388
February	15	629	4519	1451
March	11	571	4861	1600
April	10	597	4765	1601

May	16	778	5006	1720
June	13	728	4598	1618
July	11	616	4788	1677
August	21	670	4698	1687
September	10	489	4793	1791
October	16	805	4936	1873
November	13	645	5401	1975
December	11	466	4927	1921
2014				
January	16	638	4856	1897
February	15	545	4933	1960
March	13	519	4972	2000
April	16	728	4949	2106
May	23	854	4882	2092
June	18	731	4885	2107
July	15	626	4906	2125
August	16	629	5139	2217
September	19	767	5256	2294
October	19	501	5194	2248
November	14	631	5156	2307
December	32	823	5112	2301
2015				
January	10	414	5212	2350
February	16	593	5491	2461
March	21	614	5346	2452
April	15	488	5091	2430
May	21	684	4788	2368
June	24	681	4906	2302

APPENDIX II: CONSTITUENTS OF THE NSE 20 SHARE INDEX AS AT DECEMBER 2014

AGRICULTURAL
1   Sasini Ltd.
BANKING
2   Barclays Bank Ltd.
3   CFC Stanbic Holdings Ltd.
4   Equity Bank Ltd.
5   Kenya Commercial Bank Ltd.
6   Standard Chartered Bank Ltd.
7   The Co-operative Bank of Kenya Ltd.
COMMERCIAL AND SERVICES
8   Kenya Airways Ltd.
9   Nation Media Group.
10   Scan group Ltd.
CONSTRUCTION & ALLIED
11   ARM Cement Ltd.
12   Bamburi Cement Ltd.
ENERGY & PETROLEUM
13   KenGen Ltd.
14   KenolKobil Ltd.
15   Kenya Power & Lighting Co Ltd.
INSURANCE
16   British-American Investments Co (Kenya) Ltd.
INVESTMENT
17   Centum Investment Co Ltd.
MANUFACTURING & ALLIED
18   British American Tobacco Kenya Ltd.
19   East African Breweries Ltd.
TELECOMMUNICATION & TECHNOLOGY
20   Safaricom Ltd.

APPENDIX III; Descriptive Statistics of NSE Index Composite Returns. (Ri, t) 2011-2014

Company	Mean	Std Dev	Skewness	Kurtosis	Variance
Sasini Ltd	0.05	0.07	1.41	1.55	0
Barclays Bank Ltd	0.05	0.1	1.67	3.66	0.01
CFC Stanbic Holdings Ltd	0.21	0.04	1.7	3.81	0.14
Equity Bank Ltd Ord	0.27	0.24	0.89	-3	0.09
Kenya Commercial Bank Ltd	0.36	0.61	1.64	2.31	0.25
Standard Chartered Bank Ltd	0.1	0.11	1.27	-4.35	0.01
Co-operative Bank of Kenya Ltd	0.08	0.05	-1.73	2.64	0.01
Kenya Airways Ltd	-0.06	0.93	1.05	2.22	0.58
Nation Media Group	0.27	0.64	1.63	3.57	0.33
Scan group Ltd	-0.05	0.02	1.72	3.65	0.01
ARM Cement Ltd	-0.06	0.38	-0.2	0.41	0.11
Bamburi Cement Ltd	-0.03	0.1	-0.92	-1.67	0.02
Ken Gen Ltd	-0.06	0.28	-1.01	-3.37	0.06
Kenol Kobil Ltd	-0.03	0.06	1.13	2.1	0.02
Kenya Power & Lighting Co Ltd	-0.11	0.19	-1.71	1.71	0.03
British-American Investments Ltd	0.52	0.53	1.73	-5.34	0.37
Centum Investment Co Ltd	0.37	0.29	1.33	-0.44	0.26
British American Tobacco Kenya	0.47	0.77	1.73	0.43	0.4
East African Breweries Ltd	0.12	0.23	1.7	3.55	0.04
Safaricom Ltd Ord	0.31	0.5	1.4	-2	0.18