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Abstract

Investor sentiment is associated with attitude, thought, feeling, mood, belief, judgment, or expectation of market performance. The sentiment feeling is associated with investors' cognitive comparisons in their investment as well as their experience in making an investment decision. This study examined the effect of investor sentiment on stock market return of non-financial firms listed on the Nairobi Securities Exchange. The study adopted positivism as data collection and hypothesis development and testing was achieved. The study used quantitative research design to correlate study variables using mathematical analysis methods. The correlation results indicated that investor sentiment portrayed a positive association to stock market return. Regression of coefficients of the static model results indicate that investor sentiment and stock market return of non-financial firms listed on the Nairobi securities exchange is positively and significantly related. The results implied that there exist a positive and significant relationship between investor sentiment on stock market return since their coefficient values were positive. The regression coefficients result of lagged stock market return and stock market return was positively and significantly related. The regression of coefficients results indicate that investor sentiment and stock market return is positively and significantly related. The study concluded that investor sentiment has a positive and significant effect on stock market return in non-financial firms. These results imply that when investors are more optimistic about the market generating excess returns, their extreme optimism leads to more speculative activities that tempt them to invest even more. The study also shows that sentiment is relatively correlated with stock returns significantly over time. The study recommends that by taking the investor sentiment into account as a significant determinant of stock market volatility in asset price models, investors can enhance their stock returns. The results can inform on policymakers’ efforts to stabilize stock market volatility and uncertainty in order to protect investors’ wealth and attract more investors.

Keywords: *Investor Sentiment, Stock Market Return & Non-Financial Firms*

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1.1 Introduction

Stock market returns play significant roles in the economy. They provide useful signals regarding the future state of the economy, including economic and financial status (Concetto & Ravazzolo, 2019; Dalika & Seetharam, 2015; Fredrick & Muiva, 2015). Their stochastic behavior provides information concerning market expectations and risk attitudes of investors in the market (Bintara & Tanjung, 2019; Duy, & Huu Phuoc, 2016; Gu & Li, 2018). Investors use stock market indices to understand trends in the economy. The stock market returns are useful for policymakers, researchers, and stock market participants keen on making various forecasts, developing regulatory rules, constructing portfolio strategies, or determining implications for policy (Alajekwu, Obialor & Okoro, 2017; Hasanbaglou & Salteh, 2016; Makau & Jagongo, 2018; Nyangara & Mazviona, 2014).

Investor sentiment is associated with attitude, thought, feeling, mood, belief, judgment, or expectation of market performance (Almansour, 2015; Mweu & Omwenga, 2017). Generally, the sentiment feeling is associated with investors' cognitive comparisons in their investment as well as their experience in making an investment decision (Zweig, 1973). Moreover, the proxies of investor sentiments include discount rate, the closed-end fund discount rate, IPO quantity, price-earnings ratio, turnover rate, and consumer confidence index which are used to measure investor sentiment changes (Dasgupta & Singh 2018; Daszyńska-Żygadło, Szpulak & Szyszka, 2014; Naik & Padhi, 2016; Ahmad & Matahir, 2016; Chowdhury & Gizelis, 2016). Investor sentiment is a critical variable in the prices of stocks and has a more substantial impact on the stock returns (Baker, & Wurgler, 2006; Dasgupta, & Singh, 2018). Higher sentiments lead to higher stock returns, and lower sentiment leads to lower stock returns and sometimes does not influence stock returns (Mathur, & Rastogi, 2018; Tuyon *et al.*, 2016; Duy & Huu Phuoc, 2016). However, to make an informed decision, rational investors conduct a technical analysis to determine future stock trends. Accordingly, overconfidence and loss aversion variables had a negative and significant effect on stock market reaction and mental accounting had a negative and insignificant impact on the stock market reaction (Cherono, Nasieku, & Olweny, 2018; Mweu, & Omwenga, 2017).

Studies on the relationship between investor sentiment and stock market returns revealed inconsistent findings. The studies by (Daszyńska-Żygadło, Szpulak & Szyszka, 2014; Dalika & Seetharam, 2015; Chowdhury & Gizelis, 2016; Alajekwu, Kamuti & Omwenga, 2017; Wanjau, 2018) reported positive relationship between investor sentiment and stock return. On the other hand, a negative relationship between investor sentiment and stock market returns was found in the studies by Oprea and Brad (2014), Obialor and Okoro (2017), Metwally and Darwish (2015), and Mathur and Rastogi (2018). Rational investors act on informed decisions and conduct either technical or fundamental analysis to determine the future trend of stocks (Almalki, 2016; Araghi & Attari, 2013; Aroni, Namusonge, & Sakwa, 2014). The technical analysis mainly focuses on scrutinizing the historical price movements of a particular stock to predict the future trend of the stock (Kwofie & Ansah 2018). Fundamental analysis tends to focus more on the cash flows, profit growth of companies and any other announcements that could potentially lead to an increase in the share price of a particular stock (Bintara & Tanjung, 2019; Celani & Singh, 2011).

1.2 Statement of the Problem

Stock market returns among non-financial firms listed on the Nairobi securities exchange (NSE) were uncertain for investors to predict future prices (Ngugi, 2017; Karungu, Memba, & Muturi, 2018). Theoretically, investors are unable to precisely interpret what causes returns trends to deviate from the expectation. The stock market returns for the period of the current study were reported to have decreased by 6.71% in the year 2019 (NSE, 2020). Similarly, the share market performance among the non-financial firms listed on the NSE for the last quarter of 2017 declined considerably to Kshs. 25.39 billion from Kshs. 46.10 billion in the same quarter in 2016 (NSE, 2020). The stock market in Kenya decreased by 189 points since the beginning of 2019 and the only time Kenya stock market reached an all-time high of 6161.46 points was in January of 2007 (NSE, 2019). Besides, some non-financial firms such as Marshall East Africa Ltd, Hutchings Biemer and Baumann were delisted while Atlas Africa Industries Ltd and Deacons were suspended from trading (CMA, 2018).

Previous studies revealed inconsistent findings on the effect of investor sentiment on stock market returns. Some studies (Dalika & Seetharam, 2019; 2015; Baloch, 2015; Machdar, Manurung & Murwaningsari, 2017; Ngugi, 2017; Ali, 2017; Alajekwu, Obialor & Okoro, 2017; Kamuti & Omwenga, 2017; Wanjau, 2018; Oprea & Brad, 2014) found a positive relationship between investor sentiments on stock market returns. On the contrary, Georgios Papanastasopoulos, Andreas, Tsalas and Dimitrios Thomakos (2016), Mohammad and Javid (2015), Chowdhury and Gizelis, (2016), Cherono, Nasieku and Olweny (2017) found a negative relationship between investor sentiment on stock market returns. Therefore, previous studies were not adequate to give inferences about the Kenyan market. Consequently, a knowledge gap exists, to fill this gap current study on the effect of investor sentiment on the stock market return of non-financial firms listed on the Nairobi securities exchange was conducted to fill this gap.

1.3 Objectives of the Study

To examine the effect of investor sentiment on stock market return of non-financial firms listed on the Nairobi Securities Exchange

1.4 Research Hypotheses

H₁: Investor sentiment has a positive and significant effect on the stock market return of non-financial firms listed on the Nairobi Securities Exchange

2.0 Literature Review

2.1 Theoretical Review: Efficient Market Hypothesis

Eugene Fama developed the efficient market hypothesis in the 1960s. The hypothesis states that the market prices for an organization's assets portray all the information needed for the investment. Based on the theory, investors rely on their experience in making investment decisions because stock market returns are influenced by various types of information that arrive randomly every day, hour, minute, or even second (Borges, 2010). Investor sentiments are determined by the discount rate and consumer confidence index, which influences the stocks' prices.

The theory determines that investors' only opportunity to gain higher returns on their investments is through purely speculative investments that pose a substantial risk (Alquraan, Alqisie & Al Shorafa, 2016). The prices of future stocks can be predicted based on previous prices (Choi & Jung, 2008). The prices of properties in the market reflect the prevailing market conditions and

future prices can be predicted with certainty. At any given time, stock prices reflect all available information and trade at exactly their fair value (Timmermann & Granger, 2004).

Based on the hypothesis, investors can rely on cognitive factors and their experience in making investment decisions (Malkiel, 2003). Most investors are concerned with discount rate, price-earnings ratio and turnover rate and consumer confidence index before making the investment decisions (Ball, 2009). The theory shows that the mood of the investors influences the stock market returns either positively or negatively. Positive mood influences the stock market returns positively, while negative mood influences the stock market returns negatively. Investor sentiments are one of the underlying reasons investors choose a passive investing strategy (Norman, 2014). Investing in a particular stock is determined by investors' feelings about the future expectation of market performance.

The EMH is based on three assumptions about the behavior of individual investors. First, investors are assumed to be rational and hence value securities rationally. Second, if there are irrational investors, then these irrational investors' actions take effect in opposite directions and cancel each other out (Nguyen & Ali, 2011). Third, if there are actions by irrational investors that take effect in the same direction, there are enough rational arbitrageurs whose actions bring prices back to the fundamental level (Eom, Choi & Jung, 2008). The theory assumed that no investor has insider information concerning the market and this may not apply. In addition, other factors that make it difficult for the efficient market hypothesis to hold, such as market fluctuation and economic instability and forecasting about stock prices (Rashid, Fayyaz & Karim 2019; Dalika & Seetharam 2015; Alajekwu, Obialor & Okoro (2017).

The theory was relevant to the current study since it informs the investor sentiment, stock market return and firm size variables. The theory was applied in this study to explain how investor sentiments referred to as the general mood of investors influence the stock market returns and whether the stock market returns measured in price growth and firm size measured in asset base have all relevant information needed for investment decision. The investors' rationality makes them make investment decisions based on intelligent thinking about stock prices and asset base rather than on emotions. Positive mood influences the stock market returns positively, while negative mood influences the stock market returns negatively. Therefore, the theory informs the variable of investor sentiment and stock market returns as well as firm size as moderating variable in the current study.

2.2 Empirical review

In Pakistan, Rashid, Fayyaz and Karim (2019) examined the influence of investor sentiment on stock market returns. The secondary data was obtained from listed firms on the Pakistan Stock Exchange for thirteen years (2000–2013). The proxies that were used for investor sentiments were price-earnings ratio, initial public offering, and discount rate. Secondary data was used for the study. The results indicate that investor sentiment had a positive effect on the stock market returns. The changes in price-earnings ratio, initial public offering, and discount rate were significant in determining the stock market returns.

Similarly, in South Africa, Dalika and Seetharam (2015) examined the effect of investor sentiment on the stock returns using data for ten years from 1999 to 2009. The study constructed a composite index of investor sentiment as the linear combination of four indirect measures, namely, volatility premium, the total volume of IPOs, average initial first day returns of IPOs and market turnover. In addition, the Johannesburg Securities Exchange (JSE) All Share Index was used as the proxy

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for stock market returns. Secondary data and panel research design was used in the study. The study findings indicate that investor sentiment has a substantial impact on share returns in South Africa. When sentiment is low, subsequent returns are relatively high on smaller stocks, high volatility stocks, extreme growth stocks and young stocks. It is worth noting that whereas investor sentiment was measured using three ratios namely price-earnings ratio, initial public offering, and discount rate in the study by Rashid, Fayyaz and Karim (2019), Dalika and Seetharam (2015) used four ratios namely volatility premium, the total volume of IPOs, average initial first day returns of IPOs and market turnover.

In Nigeria, Alajekwu, Obialor, and Okoro (2017) used the consumer confidence index (CCI) proxy to examine the effect of investor sentiment on stock market returns. Secondary data was obtained from Nigerian Stock Exchange for eight years from 2008 to 2015. The study utilized the ordinary least square regression and granger causality techniques for data analysis. The results showed that investor sentiment had a positive effect on the aggregate stock market returns after controlling fundamentals such as the industrial production index, consumer price index, and Treasury bill rate. Secondly, there was uni-directional causality that runs from a change in investor sentiment to stock market returns.

In Romania, Oprea and Brad (2014), just like Alajekwu, Obialor and Okoro (2017), used consumer confidence index as a proxy for investor sentiment. The secondary data was obtained from the Bucharest Stock Exchange for ten years 2002-2011 with 120-year observations. The study by Oprea and Brad (2014) revealed that changes in consumer confidence was positively related to stock market returns. This denotes that individual investor sentiment influences stock prices. Further, it established that this relationship could quickly be removed by the forces of arbitrage and price adjustments could be realized in less than one month. In addition, the relationship between individual investor sentiment and the security prices of 10 of the most liquid companies on the Bucharest Stock Exchange was positively significant.

Another study by Limongi Concetto and Ravazzolo (2019), investigated how investor sentiment affects stock market returns in the U.S.A and Europe. The stock market returns were measured in terms of the growth rate of share price while the proxies of the investor sentiments included initial public offering, price-earnings ratio, discount rate and consumer confidence index. The study utilized a descriptive research design. The findings of the study showed that investor sentiment had a negative impact on the stock market returns in the case of the USA, while in the European market, there was no relationship found to exist between investor sentiment and stock market returns. The study concluded that the influence of investor sentiments on stock market return vary from one county to another.

The empirical literature reviewed regarding investor sentiments and stock market returns had mixed results. Some of the studies showed that investor sentiment positively affected stock market returns, while other studies exhibited a negative effect. For instance, a positive effect between investor sentiments and stock market returns was found in these studies (Rashid, Fayyaz & Karim, 2019; Dalika & Seetharam, 2015; Alajekwu, Obialor & Okoro, 2017; Kamuti & Omwenga, 2017; Wanjau, 2018; Oprea & Brad, 2014). However, those studies that found a negative effect between investor sentiments and stock market returns include (Limongi Concetto & Ravazzolo, 2019; Chowdhury & Gizelis, 2016; Schmeling, 2009; Cherono, Nasieku & Olweny, 2017). Therefore, the reviewed literature on the effect of investor sentiments on stock market returns portrays a

knowledge gap. The findings of the studies are inconsistent. The current study tested H₁ that investor sentiment has a positive and significant effect on stock market return.

2.3 Conceptual Framework

The conceptual framework was developed from the literature review, and it shed light on the methodology that was used in the study. The conceptual model in Figure 1 depicts the relationship between investor sentiment on the stock return market to non-financial firms listed in the Nairobi Securities Exchange.

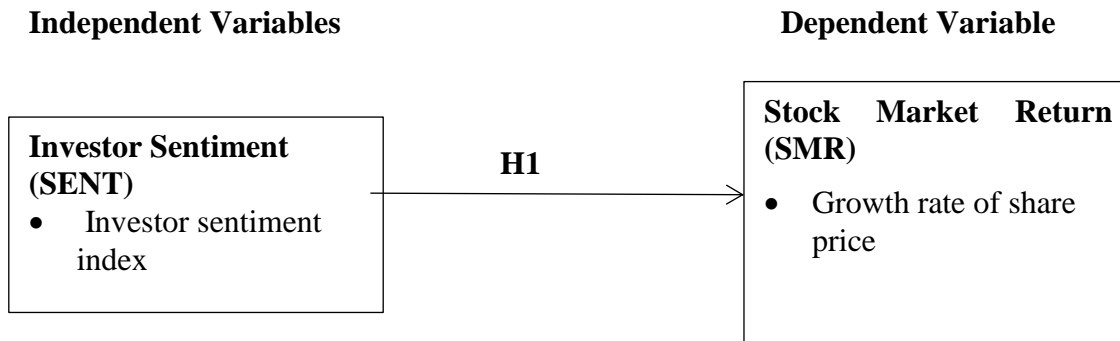


Figure 1: Conceptual Model

2.3.1 Stock market return

There are inconsistencies on how the stock market return is measured. Some studies use accounting-based measures such as ROE and ROA to measure stock market return (Corredor, Ferrer & Santamaria, 2015; Kirui, Wawire & Onono, 2014; Limongi Concetto & Ravazzolo, 2019; Suciati, 2018). On the other hand, other scholars (Chowdhury & Gizelis, 2016; Machdar, Manurung & Murwaningsari, 2017; Ali, 2017; Santosa, 2020) use the growth rate of share price as a measure of stock market returns.

In the current study, the researcher used growth rate of share price to measure the stock market return. The justification of using the growth rate of the share price values is that the stock prices change every day depending on the market forces and when more investors buy a stock then the price moves up (Baloch, 2015; Rashid, Fayyaz & Karim, 2019; Cheron, 2018; Oprea & Brad, 2014). Most of the investors are more concerned with the rise or fall of the share prices to make the investment decision. Therefore, the growth rate of the share price was the best proxy to measure the stock market return as follow.

$$SMR = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} * 100\% \tag{1}$$

Where:

SMR: Stock Market Return

P_{i,t} : Average stock price in year t

P_{i,t-1} : Average stock price in year t-1 (previous year)

The study used growth rate of share price to measure the stock market return. According to Bintara and Tanjung (2019) return can be computed by stock price in year t less average stock price in year $t-1$ (previous year) dividing by lagged stock price. The empirical studies reviewed revealed yearly growth rate of the share price was the best proxy to measure the stock market return (Chowdhury & Gizelis, 2016; Machdar *et.al*, 2017; Ali, 2017; Santosa, 2020).

2.3.2 Investor sentiment

The investor sentiment index was measured by standardizing and combining information from the proxies using weighted average similar to (Baker & Wurgler, 2007; Gu & Li 2018; Chen, Chong & She 2013; Tuyon, Ahmad & Matahir 2016; Naik & Padhi 2016, Oprea & Brad 2014). The current study used sentiment index from combination of the following weighted ratios: Earnings Per Share (EPS), Price to Earnings Ratio (PER), Dividend Per Share (DPS), Net Asset Value per Share (NAV), and Current Ratio (CR). Earnings Per Share (EPS) is firm's net profit divided by the number of shares outstanding. The higher a company's EPS, the more profitable and greater value it is considered. Price to Earnings Ratio (PER) is the ratio of a firm's share price to the earnings per share. The ratio is used for valuing firms and to find out whether they are overvalued or undervalued.

Dividend Per Share (DPS) is the sum of declared dividends issued by a company for every share outstanding. Higher yielding dividend stocks provide more income while lower yielding dividend stocks equal less income. Net Asset Value per Share (NAV) is an expression for net asset value to the number of outstanding shares. A higher NAV simply means that the firm's investments have fared well. Finally, Current Ratio (CR) is a liquidity ratio that measures a firm's ability to pay short-term obligations or those due within one year. It tells investors and analysts how a company can maximize the current assets on its balance sheet to satisfy its current debt.

Therefore, current study constructed investor sentiment index using weighted average of Earnings Per Share (EPS), Price to Earnings Ratio (PER), Dividend Per Share (DPS), Net Asset Value per Share (NAV), and Current Ratio (CR). The investor sentiment index, denoted by $SENT_t$, is given by:

$$SENT_{i,t} = \frac{(EPS_{i,t} + PER_{i,t} + DPS_{i,t} + NAV_{i,t} + CR_{i,t})}{5} \quad (2)$$

Earnings Per Share (EPS): - is a firm's net profit divided by the number shares outstanding. The higher a company's EPS, the more profitable and greater value it is considered.

$$EPS_{i,t} = \frac{\text{Earnings Attributable to Shareholders}_{i,t}}{\text{Number of Outstanding Shares}_{i,t}}$$

Price to Earnings Ratio (PER): - is the ratio of a firm's end year share price to the company's earnings per share. The ratio is used for valuing firms and to find out whether they are overvalued or undervalued. A high PER could mean that a stock's price is high relative to earnings and possibly overvalued. Conversely, a low PER might indicate that the current stock price is low relative to earnings.

$$PER_{i,t} = \frac{\text{Market Price Per Share}_{i,t}}{\text{Earnings per Share}_{i,t}}$$

Dividend Per Share (DPS): - is the sum of declared dividends issued by a company for every ordinary share to total number of outstanding shares. Higher yielding dividend stocks provide more income while lower yielding dividend stocks equal less income.

$$DPS_{i,t} = \frac{\text{Dividend (Kshs) paid}_{i,t}}{\text{Total Number of Shares Outstanding}_{i,t}}$$

Net Asset Value per Share (NAV): - is an expression for net asset value to the number of outstanding shares. A higher NAV simply means that the firm's investments have progressed well.

$$NAV_{i,t} = \frac{\text{Total Net Assets}_{i,t}}{\text{Number of outstanding Shares}_{i,t}}$$

Current Ratio (CR): - is a liquidity ratio that measures a firm's ability to pay short-term obligations or those due within one year. It tells investors and analysts how a company can maximize the current assets on its balance sheet to satisfy its current debt. In general, a current ratio between 1.5 to 2 is considered beneficial for the business.

$$CR_{i,t} = \frac{\text{Total Current Assets}_{i,t}}{\text{Total Current Liabilities}_{i,t}}$$

The investor sentiment index was measured by standardizing and combining information from the proxies using weighted average (Baker & Wurgler, 2007; Gu & Li 2018; Chen, Chong & She 2013; Tuyon, Ahmad & Matahir 2016; Naik & Padhi 2016, Oprea & Brad 2014). The current study used sentiment index from combination of the following weighted ratios; - earning per share (EPS), price to earnings ratio (PER), dividend per share (DPS), net asset value per Share (NAV), and current ratio (CR). Some limitation of the index includes substitution biasness and lack of individual relevance. The current study considered five investor sentiment proxies and by averaging to minimize the baseness.

3.1 Research Methodology

The study adopted positivism as data collection and hypothesis development and testing was achieved. Hypotheses was tested and confirmed, which can be used for further research. Further, positivism was established on quantifiable observations and accordingly, statistical analysis is obtained. The study used a deductive approach since the researcher tested the hypothesis and establish a conclusion of whether investor sentiment affect the stock market return. The study used quantitative research design to correlate study variables using mathematical analysis methods. Descriptive is often used as a pre-cursor to more quantitative research designs with the general overview giving some valuable pointers as to what variables are worth testing quantitatively (Williams, 2007).

The target population for the study was all 43 non-financial firms listed on the Nairobi securities exchange. The unit of analysis for the study was individual non-financial firms listed in NSE. The targeted population included eight sectors namely, agricultural sector, manufacturing and allied, commercial and services sector, investment, automobiles, construction and allied sector, telecommunications and technology, energy, and petroleum. The study did not consider firms listed under the banking and insurance sectors since they are associated with tight regulations and compliance. In addition, the heterogeneity makes such sector difficult to perform hypothesis testing for the study variables (Mwangi et al., 2012). The researcher conducted a census. However,

only thirty-one (31) non- financial companies were active over the study period and thus were used in the study. This enabled the researcher to achieve observations of 310 for panel data.

Model Specification

To test the hypothesis in current study, static and dynamic panel model were used. Static panel data analysis considers time series data and cross-sectional data simultaneously. The static panel model before interaction as presented in equation 3.

$$SMR_{it} = \beta_0 + \beta_1 SENT_{it} + \varepsilon \quad (3)$$

Where;

SMR = Stock Market Return

i=non-financial firms (1...31)

t= time (2010-2019)

β_0 = Constant

SENT = Investor Sentiment Index

β_1 = Coefficient of the independent variable

ε = Error term is a residual variable when the model does not fully represent the actual relationship between the independent variables and the dependent variables. A one-way error model assumes $\lambda t=0$ while a two-way error allows for $\lambda \in R$.

The composite error component:

$$u_{i,t} = \mu_i + \lambda_t + \varepsilon_{i,t}$$

Where;

μ_i – the unobservable individual-specific effect

λ_t – the unobservable time-specific effect

$u_{i,t}$ – the remainder disturbance

On the other hand, dynamic panel data model contains at least one lagged dependent variable as independent variable. The investors rely on information of current prices or today prices to predict future returns. Dynamic panel models have ability to determine short and long run values of coefficients. Additionally, such models make it possible for researchers to choose which explanatory variables are potentially endogenous or exogenous (Harrison, 2007). The dynamic panel model before interaction as presented in equation 4.

$$SMR_{it} = \beta_0 + \beta_1 SMR_{it-1} + \beta_2 SENT_{it} + \varepsilon \quad (4)$$

SMR_{it-1} = Lag Stock Market Returns

4.0 Results and Findings

4.1 Descriptive Statistics

The section presents the descriptive statistical analysis of the data collected for all variables for the period 2010 to 2019. The descriptive statistics encapsulate the measure of central tendency such as the mean, the measures of dispersion such as standard deviation, minimum and maximum observations as well as measures of distribution (skewedness and kurtosis) were used. Descriptive statistics were presented as investor sentiment (ratio) and stock market return (percentage). The analysis is useful in enabling the presentation and visualization of raw data in a meaningful way. The results are presented in Table 1.

Table 1: Descriptive Statistics Outputs

Variable	Investor Sentiment	Stock Market Return (%)
Panel A		
Aggregate Values		
Mean	18.882	4.5%
Min.	-80.180	-97%
Max.	187.980	42.75
Std Dev.	26.364	3.823
Skewd	0.011	0.038
Kurtosis	0.030	0.045
Panel B		
Annual Means		
Year		
2010	12.794	5.00%
2011	17.269	19.30%
2012	21.738	1.40%
2013	24.789	13.00%
2014	17.450	0.80%
2015	20.405	9.10%
2016	18.480	-2.60%
2017	18.000	1.80%
2018	18.391	-2.30%
2019	18.300	-0.60%
Panel C		
Equality of Means		
Anova F	2.53	4.076
Welch F	0.008	0.003

A balanced panel of 31 non-financial firms observed for 10 years, investor sentiment as an index, stock market return variable is a percentage. Table 1 show the summary of descriptive statistic for the secondary data observations of 31 firms over the 10 years period (2010-2019). The study result had a total observation of 310. The results indicate that investor sentiment had a mean of 18.882 with a minimum of -80.180 and maximum of 187.980. This implied that the prevailing attitude of investors in stock market significantly varied over time. This is also depicted by the standard deviation of 26.364 larger than the mean showing large disturbances in investor sentiment. Stock market return had a mean of 4.49% with a minimum of -97% and maximum of 42.75%. The standard deviation was 3.82 signifies variation in stock market return. This implied that despite

some firms recording increase in their stock performance, there were firms whose stock gain was declining steadily which points to presence of struggling firms.

In panel C, the results on test for equality of means indicate that investor sentiment (F-statistic=2.53, P-value=0.008), and stock market return (F-statistic =4.078, P-value=0.003). The Welch test also indicate that the variables had significant levels below the critical 0.05. The test for equality of means implied that the variable means are different, and it is alternative to the ANOVA and can be used even if the data violates the assumption of homogeneity of variance.

4.2 Correlation Analysis

Correlation analysis was carried out to detect the association between the explanatory variables. The mean score for each of the independent variables was calculated using Pearson’s correlation. When the p-value is less than or equal to 0.05 the correlation is statistically significant. However, if the p-value is greater than 0.05 correlation is not statistically significant (Statistics Solution, 2018). Positive correlation implies that as one variable increases the other variable tends to also increase and negative correlation implies inverse.

Table 24: Correlation Analysis Outputs

	Stock Market Return	IgStock Market Return	Investor Sentiment
Stock Market Return	1.000		
Lag Stock Market Return	0.897*	1.000	
	0.000		
Investor Sentiment	0.762*	0.279*	1.000
	0.000	0.000	

The results in Table 2 indicate that the lagged stock market return was positively and significantly associated to stock market return ($r= 0.897^*$, $p=0.00<0.05$). This implied that there was a high association between lagged stock market return and stock market return of 82.6%. Investor sentiment was positively and significantly associated to stock market return ($r= 0.762^*$, $p=0.00<0.05$). This implied that there was a high association between investor sentiment and stock market return of 76.2%. The correlation coefficient matrix presents investor sentiment portrayed a positive association to stock market return. The level of association between the independent variables and the dependent variable was high of above 70%. Further, the results indicate that there was no multicollinearity between the independent variables since the R-values were below 0.7 as recommended by Cooper and Schindler (2008).

4.3 Regression Analysis

The first stage involved regressing stock market return against explanatory variables as specified under static and dynamic panel models. Static panel data analysis considers time series data and cross-sectional data simultaneously. While dynamic panel data model contains at least one lagged dependent variable as independent variable. Dynamic panel models have ability to determine short and long run values of coefficients. Additionally, such models make it possible for researchers to choose which explanatory variables are potentially endogenous or exogenous (Harrison, 2007). Regression analysis was conducted to determine whether there was a significant relationship between the independent and dependent variables. In the static model, investor sentiment was

predicted against stock market return of non-financial firms listed on the Nairobi Securities Exchange. The results are as shown in Table 3.

Table 3: Regression Outputs for Models

Static Model: Random - effects					
Stock Market Return	Expected sign	Coef.	Std. Err.	z	P> z
Investor Sentiment	Positive (+)	0.322	0.049	6.540	0.000
Constant		0.292	0.030	9.890	0.000
F-statistic		9.36			
Prob > chi ²		0.000			
Rsquared		0.562			
Number of observations		310			

Dynamic Model: Random- effects					
Stock Market Return	Expected sign	Coef.	Std. Err.	z	P> z
lagStock Market Return	Positive (+)	0.270	0.050	5.440	0.000
Investor Sentiment	Positive (+)	0.204	0.052	3.930	0.000
constant		0.283	0.032	8.710	0.000
F-statistic		10.53			
Prob > chi ²		0.000			
Rsquared		0.655			
Number of observations		310			

As presented in the Table 3, the regression of coefficients of the static model results indicate that investor sentiment and stock market return of non-financial firms listed on the Nairobi securities exchange is positively and significantly related ($\beta=0.322$, $p=0.000$). The coefficient of determination R Square is 0.562. The static model indicates that investor sentiment, explains 56.2% of the variation in stock market return. The findings further confirm the reliability of static model on investor sentiment against stock market return was significant with a Prob= 0.000 and supported by F-statistic of 10.53. The results imply that there exist a positive and significant relationship between investor sentiment on stock market return since their coefficient values were positive and the p-values were less than the critical 0.05. .

Further, a dynamic panel model which has ability to determine short and long run values of coefficients was developed. The dynamic model, the dependent variable stock market return was lagged. The regression coefficients result of lagged stock market return and stock market return was positively and significantly related ($\beta=0.270$, $p=0.000$). The regression of coefficients results indicate that investor sentiment and stock market return is positively and significantly related ($\beta=0.204$, $p=0.000$).

The coefficient of determination R Square was 65.54%. The dynamic model indicates that lag stock market return, investor sentiment explains 65.54% of the variation in stock market return. This depicted an increase from 56.62% to 65.54% as compared to the statistic model. This imply that dynamic model is more suitable and reliable in explaining relationship of explanatory variable

and dependent variable. The findings further confirm that the dynamic regression model of lag stock market return, investor sentiment against stock market return was significant with a Prob= 0.000 and supported by F-statistic of 10.53. This implies that there exist a positive and significant relationship between investor sentiment on stock market return of non-financial since their coefficient values were positive and the p-values were less than the critical 0.05. The findings implied that the variables present significant impact on stock market performance in the long run.

The fitted static model before interaction.

$$SMR_{it} = 0.292 + 0.322SENT_{it}$$

The fitted dynamic model before interaction.

$$SMR_{it} = 0.283 + 0.270SMR_{it-1} + 0.204SENT_{it}$$

4.4 Discussion of Findings

The objective of the study sought to examine the effect of investor sentiment on stock market return of non-financial firms listed on the Nairobi securities exchange. Correlation results in Table 3 showed that investor sentiment was positively and significantly associated to stock market return of non-financial firms ($r = 0.762$, $p = 0.00 < 0.05$). The results in the static model indicate that investor sentiment and stock market return is positively and significantly related ($\beta = 0.322$, $p = 0.000$). Further, the dynamic model results indicate that investor sentiment and stock market return is positively and significantly related ($\beta = 0.270$, $p = 0.000$).

The p-values 0.000 were below the critical 0.05 and thus we reject the null hypothesis that investor sentiments have no significant effect on stock market return of non-financial firms. The findings are consistent with Pakistan, Rashid, Fayyaz and Karim (2019) who examined the influence of investor sentiment on stock market returns and the results indicated that investor sentiment had a positive effect on the stock market returns. The changes in price-earnings ratio, initial public offering and discount rate were significant in determining the stock market returns.

The findings are in line with Alajekwu, Obialor and Okoro (2017) who used one proxy- consumer confidence index (CCI) to examine the effect of investor sentiment measured and future stock returns for the period 2008-2015. The finding revealed that investor sentiment had a positive effect on the aggregate stock market returns after controlling fundamentals such as industrial production index, consumer price index, and Treasury bill rate. In addition, Dalika and Seetharam (2015) carried study on the effect of investor sentiment on the stock returns within the period covering 1999 and 2009. The finding revealed that investor sentiment has a substantial positive impact on share returns in South Africa. The findings are consistent with Kamuti and Omwenga (2017) who study established a positive correlation between market information and investors' investment decision making and information's availability was playing a central role in investors' decision-making at NSE. Oprea and Brad (2014) revealed that changes in consumer confidence was positively related to stock market returns. This denotes that individual investor sentiment influences stock prices. Further, it established that this relationship could quickly be removed by the forces of arbitrage and price adjustments could be realized in less than one month.

The findings are in line with the efficient market hypothesis that posits market prices for an organization's assets portray all the information needed for the investment. The mood of the investors influences the stock market returns either positively or negatively. Positive mood influences the stock market returns positively, while negative mood influences the stock market

returns negatively. This explains how investor sentiments referred as general mood of investors influence the stock market returns and whether the stock market returns measured in price growth and firm size measured in asset base have all relevant information need for investment decision.

The investors' rationality makes them make investment decisions based on intelligent thinking about stock prices and asset base rather than on emotions. Positive mood influences the stock market returns positively, while negative mood influences the stock market returns negatively. Further, the findings agree with behavioral portfolio theory where the expectations of the returns are determined by the ability of the investor to invest in stock market. The behavioral theory plays an explicit role in the pricing of stocks while their high subjective risks come with the negative effects

However, the findings differ with those of Limongi, Concetto and Ravazzolo (2019) who investigated how investor sentiment affects stock market returns in the U.S.A and Europe showed that investor sentiment had a negative impact on the stock market returns in the case of the USA. In the European market, there was no relationship found to exist between investor sentiment and stock market returns. Further, in contrast, the study by Chowdhury and Gizelis (2016) employed two investor sentiment proxies, direct and indirect approach in study to investigate the relationship between investor sentiment and stock market returns and the results indicated that investor sentiment and stock market return as negatively related. Further, studies that found a negative effect between investor sentiments and stock market returns includes (Limongi, Concetto & Ravazzolo, 2019; Chowdhury & Gizelis, 2016; Schmeling, 2009; Cheron, Nasieku & Olweny, 2017).

5.1 Conclusions

The study concluded that investor sentiment has a positive and significant effect on stock market return in non-financial firms on the Nairobi Securities Exchange. Therefore, investor sentiment was found to play a significant role in the stock market performance that generated return predictability. These results imply that when investors are more optimistic about the market generating excess returns, their extreme optimism leads to more speculative activities that tempt them to invest even more. The study also shows that sentiment is relatively correlated with stock returns significantly over time.

6.1 Recommendations

The study recommends that by taking the investor sentiment into account as a significant determinant of stock market volatility in asset price models, investors can enhance their stock returns. The results can also help policymakers' efforts to stabilize stock market volatility and uncertainty in order to protect investors' wealth and attract more investors.

These findings are of great importance to the managers of non-financial firms listed at the Nairobi securities exchange, because it will enable them to understand the relationship between investor sentiment and stock market returns. The findings of this study will assist or guide investors in making equity share investment decisions in listed non-financial firms in NSE. The results are immensely helpful to investors and financial analysts/advisers in identifying the specific accounting information variable(s) that significantly affect stock market returns. Furthermore, the findings are expected to guide foreign investors who may want to invest in non-financial firms listed in NSE to make a comprehensive decision that will earn more returns.

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