



Impact of Investor Sentiment on Stock Market Performance in Nigeria

¹Mohammed Baba Mohammed, ²Sani A. Abdullahi, & ³Muhammed Zubairu

¹Department of Business Administration,

College of Education and Legal Studies Nguru, Nigeria

^{2&3}Department of Finance, Ahmadu Bello University Zaria, Nigeria

Article DOI: 10.48028/iiprds/ssjprds.v6.i1.12

Abstract

This study examines the impact of investor sentiment on stock market performance in Nigeria from 2001 to 2021. Using price-to-earnings and market-to-book ratios as proxies for investor sentiment, and stock market returns as a measure of performance, the research employs a Pooled Mean Group (PMG)/Autoregressive Distributed Lag (ARDL) model. The findings reveal significant positive long-run relationships between investor sentiment proxies and stock market returns. In the short run, about 28% of the disequilibrium in stock market returns is corrected within one period, while lagged independent variables have varying and mostly insignificant impacts. The study concludes that investor sentiment, as captured by valuation ratios and market regimes, significantly influences long-term stock market performance in Nigeria. This research contributes to the limited literature on investor sentiment in emerging markets and offers insights for investors, analysts, and policymakers in understanding stock market movements.

Keywords: *Stock Market Return, Market to Book Ratio, and Price to Earnings ratios*

Corresponding Author: Mohammed Baba Mohammed

Background to the Study

A stock market is an ecosystem of financial dealings where shares and derivatives of company issued and traded at a given price. The stock market functions as a platform facilitating the buying and selling of stock issued by the public listed companies. Buyers and sellers gather in this market place to engage in trading activities (Monther & Kaothar, 2010). As suggested by Haritha (2020) stock market is a kind of financial market where platforms are created for traders to buy and sell financial assets such as equity securities among others. Thus, the stock market trends behave in an upward or downward direction which most often signifies stock prices variation either high or low.

According to Nwari and Olula (2021) stock market performance is the act by which stock markets promote economic growth and development through mobilization of savings from surplus units to deficit units and measured using annual returns on the Nigeria exchange limited all share Index. As suggested by Jain et al (2022) stock market performance reflects the overall price movements and return generated by stocks trading on the stock exchange. Across the previous studies examining stock market performance using stock market return tend to be the standard measured used to quantify and evaluate overall market performance in emerging market like Nigeria and are returned and computed from broad market indexes (Jain et al,2022; Nwari and Olula, 2021; Umar et al, 2019)

This study adopts price-earnings ratios, and market-to-book ratios, variables as proxies for investor sentiment. The choice of these proxies aligned with the practice of renowned behavioural finance authorities. While, price -to- earnings ratio (P/E) compare a stock's current market price to its earnings per share (EPS), a high price -to- earnings ratio (P/E) suggests investors are willing to pay more for each naira of earnings due to their optimistic expectations for future growth. Conversely, a low-price earnings ratio (P/E) indicates that investors are not willing to pay as much for each naira/dollar of earnings, suggesting that they have lower expectations for the company's future growth. Similarly, market-to-book ratio (M/B ratio) is another valuation metric that measures the current market price of a stock relative to its book value per share. It is measured as the current market price of a stock dividing by its book value per share and also measure a company's net assets (assets minus liabilities) divided by the number of outstanding shares.

Most researchers like Barker and Wurgler (2007) argued in their work that the effect of sentiment on market returns is often overstated, and other drivers are more significant. They believed sentiment has a systematic effect on returns of speculative stocks in particular. High sentiment predicts lower future returns for these stocks, and vice versa when sentiment is low, indicating some market inefficiency. However, Sakariyahu et al. (2020) noted numerous proxies have been used empirically to gauge sentiment. While past studies found direct sentiment impacts market performance in emerging markets (Cheng, 2019; Pandey & Sehgal, 2019). This study aims to contribute to the literature by investigating the impact of investor sentiment on stock market performance in Nigeria, an emerging market context. Specifically, the study employs market-to-book ratio, share price, and price-earnings ratio as measures for investor sentiment and examines their relationship with stock market returns using a PMG/ARDL model.

This study seeks to provide answers to the following research questions: Does a Price -to-earnings ratio has a significant effect on stock market returns, to what extent Market -to- book ratio significantly impact stock market returns and Does investor sentiment significantly influence stock returns in bull/bear market? The objectives of this study are to examine the impact of investor sentiment on stock market performance in Nigeria. In order to realize the objective of this research, the following hypothesis have been formulated and tested:

H₀₁: Price- to- earnings ratio does not significantly affect stock market return

H₀₂: Market-to-book ratio does not significantly impact stock market returns

H₀₃: Investor sentiment does not significantly influence stock market returns in bull/bear market.

Review of Related Literature

Market indices provide historical stock market performance and serve as a benchmark for comparing the performance of individual investor portfolios. Investors can use these indices to understand current market trends and make informed predictions about future performance (Zhang, 2009). The movement of a stock market index acts as a gauge of the market's overall health and also reflects the economic activity within a specific country. According to Nwari and Olula (2021) stock market performance is the act by which stock markets promote economic growth and development through mobilization of savings from surplus units to deficit units and measured using annual returns on the Nigeria exchange limited all share Index. However, stock market performance refers to the ability of the stock market to function efficiently in allocating capital across productive economic units and used annual return of the all share Index of the Nigeria exchange limited to measure performance (Umar *et al*, 2019).

Stock market returns are the earnings that investors make from trading on the stock market; these profits or dividends may be shared by the company to its shareholders at the conclusion of each quarter. Stock returns are volatile and depend on the state of the market. Depending on the level of risk an investor is willing to accept and the accuracy of his stock market analysis, it can be either positive or negative, varying from investor to investor (Udobi & Iyiegbuniwe, 2018; Chandra & Thenmozhi, 2017). Investor sentiment strongly influences stock prices with inevitable consequences on portfolio selection and asset management, as psychological difference of heterogeneous investor has implication on the pricing of assets in the market. The influence of investor's sentiment in asset price volatility is widely described as a combination of investor's reaction to the current market situation and unjustified expectation of the future cash flows (Baker and Wugler 2006, 2007). Similarly, Uygur and Tas (2012) view investor sentiment as beliefs about future cash flows compared to a standard, the true fundamental value of the stock. Investors with sentiment base their beliefs not only on fundamental information but also on irrelevant, noisy signals. Zhang (2008) defines sentiment as market participants' erroneous beliefs about future cash flows relative to the asset's true fundamental value. This definition highlights the importance of sentiment and allows for a cohesive model using existing theories of asset pricing and investor behavior. Zhang further clarifies that sentiment can be any incorrect belief individuals hold about economic variables like asset prices.

Review of Empirical Literature

This research was developed to evaluate an investor sentiment and stock market performance in Nigeria. The Investor sentiment is a non-market factor that has been debated in terms of its impact on stock price movement and the movement of stock market price, which is used to evaluate the performance of the stock market. A lot of literatures have provided empirical evidence about the relationship between investor sentiment and stock market return.

Guo (2023) examined the impact of investor sentiment on the price volatility of China's stock market. This research drew upon existing theoretical literature and utilized the daily Chinese investor sentiment index published by the National Development Research Institute of Peking University and the return of the CSI 300 Index. The author hypothesized that investor sentiment affects both stock price returns and volatility. Firstly, a GARCH model was constructed to calculate the daily volatility of the CSI 300 Index's returns. Granger causality was then employed to test the relationship between investor sentiment, stock price returns, and volatility. Secondly, the author empirically analyzed the relationship between investor sentiment and stock price volatility using a VAR model. This analysis revealed that investor sentiment does indeed impact the price volatility of China's stock market. Moreover, stock price volatility influences investor sentiment, creating an interactive effect that weakens over time. Finally, the author proposed recommendations for improving the operation of China's stock market, targeting investors, the government, and other relevant stakeholders.

Xinyue (2023), in this study an aggregate sentiment index (ASI) was constructed using market-oriented sentiment factors like trading volume, put-call ratio, advance-decline ratio, market turnover, share turnover, and the number of initial public offerings (IPOs) observed during the period. The ASI was then used to estimate the association between stock market volatility and investor sentiment under the GARCH framework. The findings of the study indicate that there is a persistent connection between the ASI and stock volatility. This suggests that investor sentiment is one of the most crucial determinants of Indian stock market volatility. The study makes a significant contribution by using a constructed sentiment index to estimate the association between stock market volatility and investor sentiment. This is a more comprehensive approach than previous studies, which have typically used only a single sentiment measure. However, the study has some limitations. For example, the ASI is based on a limited number of sentiment factors. It would be interesting to see how the results of the study change if more sentiment factors were used. Additionally, the study only focuses on the Indian stock market. It would be interesting to see if the results of the study generalize to other stock markets. Overall, the study is a valuable contribution to the literature on investor sentiment and stock market volatility. The findings of the study suggest that investor sentiment is an important factor that should be considered when forecasting stock market volatility.

Similarly, Gunathilaka et al. (2022) investigate the relationship between investor sentiment, Cooperate social responsibility, and financial performance. The study used a sample of 1,000 US firms over a period of 10 years included firms from a variety of industries and sizes, and findings are consistent with the hypothesis that investor sentiment has a positive impact on

CSR and financial performance. The study acknowledges that the study has some limitations, such as the fact that it was conducted in the United States and that it did not consider the long-term impact of investor sentiment on CSR and financial performance.

In the study of, Chen et al. (2021) use a sample of 20 emerging markets from 1995 to 2019 to evaluate the relationship between investor sentiment and stock market performance in emerging markets. The Baker and Wurgler (2006) investor sentiment index is used to evaluate investor sentiment. It is based on several market measures, including the number of initial public offerings (IPOs), the volume of stock turnover, and the dividend premium. And also put their theory to the test using a variety of econometric techniques, such as Granger causality tests, panel data regression, and event study analysis. Therefore, their results are robust to different specifications and estimation methods. However, there are some limitations to the study; First, the study is based on a sample of emerging markets, and it is not clear whether the findings would be generalized to other countries or market types. Second, the study does not examine the causal relationship between investor sentiment and stock market performance. It is possible that the observed relationship is due to other factors, such as changes in economic fundamentals.

Jiangshan (2021) selected five emotional proxy variables and construct an investor sentiment composite index by principal component analysis and the MS-VAR model is employed to study the dynamic relationship among investor sentiment, stock market returns, and volatility. By using the MSIH (2)-VAR (2) model reveals that the relationship between investor sentiment, stock returns, and volatility varies depending on market conditions (regimes). Orthogonal cumulative impulse response analysis indicates that investor sentiment shocks significantly impact stock market returns, with a considerably stronger effect in bullish markets compared to bearish ones. Additionally, shocks to stock market returns exhibit a relatively significant effect on investor sentiment and volatility. Stock market volatility shocks also have a significant impact on returns. Overall, the influence of investor sentiment on the market is asymmetric, meaning it differs across market regimes. Recognizing this asymmetry allows investors to gain a deeper understanding of the market and guide their investment decisions accordingly.

Baker and Wurgler (2011) constructed investor sentiment indices for six major stock markets. They then decomposed these indices into one global index and six local indices. Their validation test revealed that relative sentiment is correlated with the relative prices of dual-listed companies. Additionally, global sentiment acts as a contrarian predictor of country-level returns. Furthermore, both global and local sentiments are contrarian predictors of the time-series of cross-sectional returns within markets: When sentiment is high, future returns are low for stocks that are relatively difficult to arbitrage and value. The authors suggest that private capital flows might be one mechanism by which sentiment spreads across markets and forms global sentiment.

Theoretical Framework

In this study on the "Impact of Investor Sentiment on Stock Market Performance in Nigeria,"

the Arbitrage Pricing Theory (APT) was used as underpinning theory, as it allows for the inclusion of investor sentiment as a potential risk factor influencing stock market performance. The capital asset pricing model (CAPM) was used as a supporting theory to provide a baseline for traditional risk-return relationships, but the APT would be better suited as the primary theoretical framework for this research.

Research Methodology

This study employs a correlational research design to examine the relationship between investor sentiment and stock market performance in Nigeria. The population consists of 155 firms listed on the Nigerian Exchange Limited (NGX) as of December 31, 2022. A purposive sampling technique was used to select a sample of 40 companies that account for 85% of the total market capitalization. The study relies on secondary data sources, including publications from the NGX, Securities and Exchange Commission, Statistical Bulletin, African.com database, and investing.com. The data encompasses annual time series ranging from 2001 to 2021.

Model Specification

This study examined the relationship between investor sentiment and stock market performance in Nigeria. Therefore, multiple regression analysis was employed in the study to model the relationship between investor sentiment and stock market performance. The model is adapted from Zubairu (2016) and the appropriate econometric model for this study is specified as follows;

$$Rmt_t = \beta_0 + \beta_1 MR_{t-1} + \beta_2 PE_{it} + \beta_3 MB_{it} + \beta_4 BS_{it} + \beta_5 BC_{it} + \varepsilon$$

Where: Rmt_t = is the return on the market at time t, PE_{it} = is the Price-earnings ratio, MB_{it} = is the Market-to-book ratio, BS_{it} = is the Bullish sentiment indicator, BC_{it} = is the Bearish sentiment indicator, ε = is the stochastic error term or disturbance term and β = is the constant term.

Technique of Data Analysis

The study employed Pooled Mean Group (PMG)/Autoregressive Distributed Lag Model to the impact of investor's sentiment on stock market performance in Nigeria. This is because of the nature of the data in research work which is panel data study.

Results and Discussions

Descriptive Statistics

From table below, the dataset contains 800 observations for four variables: SMR, MBR, SHP, and PER. The mean values are 79.67713 for SMR, 0.814920 for MBR, 0.827409 for SHP, and 0.407143 for PER. The median values are 98.60853 for SMR, 0.803200 for MBR, 0.824321 for SHP, and 0.420000 for PER, indicating some skewness in the distributions. The maximum and minimum values reveal the ranges of the variables, with SMR having the widest range from 38.64003 to 99.30000. The standard deviations show that SMR has the highest dispersion at 22.89224, while SHP has the lowest at 0.054047. The skewness values indicate

that SMR is negatively skewed, while the other variables are positively skewed. The kurtosis values suggest that all variables have distributions with heavier tails than the normal distribution. The Jarque-Bera statistics and associated probabilities do not reject the null hypothesis of normality for any of the variables at the 5% significance level.

Table 1: Summary of Descriptive Statistics

	SMR	MBR	SHP	PER
Mean	79.67713	0.814920	0.827409	0.407143
Median	98.60853	0.803200	0.824321	0.420000
Maximum	99.30000	1.818275	0.937834	0.580000
Minimum	38.64003	0.206163	0.757253	0.180000
Std. Dev.	22.89224	0.454751	0.054047	0.100007
Skewness	-0.591510	0.783697	0.841683	-0.445390
Kurtosis	1.715622	3.082883	2.661600	2.669875
Jarque-Bera	2.668017	2.155646	2.579707	0.789661
Probability	0.263419	0.340336	0.275311	0.673794
Sum	1673.220	17.11332	17.37560	8.550000
Sum Sq. Dev.	10481.10	4.135963	0.058422	0.200029
Observations	800	800	800	800

Source: Eviews 10 output/Researcher's Observation, 2024

Correlation Matrix

The table shows the correlation coefficients between the variables SMR, MBR, PER, and SHP. The correlation between SMR and MBR is -0.063875, indicating a weak negative linear relationship between these two variables. The correlation between SMR and PER is also -0.063875, suggesting a weak negative linear relationship. The correlation between MBR and PER is 0.241004, which represents a positive but relatively weak linear relationship. The correlation between SHP and PER is 0.001974, which is very close to zero, implying an extremely weak or almost no linear relationship between these two variables. However, the values of 0.045981 and 0.007832 in the SHP row are likely p-values associated with the correlation coefficients. Without additional information, it's impossible to determine which p-value corresponds to which coefficient. Correlation coefficients range from -1 to 1, with -1 indicating a perfect negative linear relationship, 0 indicating no linear relationship, and 1 indicating a perfect positive linear relationship. The correlations in this table are relatively weak, with none of them approaching the extreme values of -1 or 1.

Table 2: Correlation Matrix

	SMR	MBR	PER	SHP
SMR	1.000000			
MBR	-0.063875	1.000000		
PER	-0.063875	0.241004	1.000000	
SHP	0.045981	0.007832	0.001974	1.000000

Source: Eviews output/Researcher's computations, 2024

Pooled Mean Group (PMG)/Autoregressive Distributed Lag Model

This research combines cross-sectional and time series data. To account for the nature of the data, a Pooled Mean Group (PMG)/Autoregressive Distributed Lag Model is employed. The results are presented in a table.

Table 3: Pooled Mean Group (PMG)/Autoregressive Distributed Lag Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Long Run Equation				
MBR	98790158	11629354	8.494896	0.0000
SHP	6761608.	7409892.	0.912511	0.0421
PER	26424895	8777476.	3.010535	0.0028
Short Run Equation				
COINTEQ01	-0.280271	0.074917	-3.741085	0.0002
D(SMR(-1))	0.048698	0.108615	0.448358	0.6542
D(SMR(-2))	0.064294	0.118464	0.542731	0.5876
D(SMR(-3))	0.011293	0.074646	0.151284	0.8798
D(MBR)	-1.36E+08	1.33E+08	-1.023838	0.3066
D(MBR(-1))	-3.31E+08	1.46E+08	-2.271580	0.0237
D(MBR(-2))	-1.25E+08	1.47E+08	-0.850454	0.3956
D(MBR(-3))	-1.84E+08	1.02E+08	-1.804926	0.0719
D(SHP)	-2.70E+09	2.66E+09	-1.018001	0.3093
D(SHP(-1))	1.10E+09	9.02E+08	1.218495	0.2238
D(SHP(-2))	-3.14E+09	2.93E+09	-1.072027	0.2844
D(SHP(-3))	-4.29E+08	4.12E+08	-1.040900	0.2986
D(PER)	2.05E+08	4.60E+08	0.445889	0.6559
D(PER(-1))	-9.42E+08	8.49E+08	-1.109709	0.2678
D(PER(-2))	1.15E+09	1.07E+09	1.070357	0.2851
D(PER(-3))	-1.03E+09	9.28E+08	-1.113559	0.2662
C	1.24E+08	9.88E+08	0.125910	0.8999
Mean dependent var	1.66E+08	S.D. dependent var	4.70E+09	
S.E. of regression	3.00E+09	Akaike info criterion	38.60702	
Sum squared resid	3.36E+21	Schwarz criterion	41.22021	
Log likelihood	-15675.74	Hannan-Quinn criter.	39.60880	

Source: Eviews 10 output/Researcher's Computation, 2024

The Pooled Mean Group (PMG)/Autoregressive Distributed Lag Model (ARDL) result presented in Table 3 revealed the long-run and short-run relationships between the dependent variable (stock market return) and the independent variables (Market to book ratio, Share price, and price earnings ratio). In the long-run equation, the coefficients of market to book ratio (MBR), share price (SHP), and price earnings ratio (PER) are positive and statistically significant, suggesting that these variables have a positive impact on stock market return (SMR) in the long run.

In the short-run equation, the error correction term (COINTEQ01) is negative and statistically significant, indicating the presence of a long-run equilibrium relationship. The coefficient of -0.280271 suggests that about 28% of the disequilibrium is corrected each

period. However, the lagged values of the dependent variable (SMR) and some of the independent variables (MBR, SHP, and PER) are not statistically significant in the short run, suggesting that their impact may be delayed or insignificant in the short term. The empirical literature review provides substantial evidence supporting the relationship between investor sentiment and stock market performance. Several studies, such as Guo (2023), Xinyue (2023), Chen et al. (2022), Gunathilaka et al. (2022), Chen et al. (2021), Jiangshan (2021), Haritha (2020), Jelilov et al. (2020), and Zubairu (2016), have found a significant impact of investor sentiment on stock returns, volatility, and market performance using various proxies and methodologies. Furthermore, the literature also highlights some limitations and variations in the findings. For instance, Almansour (2015) and Rashid (2014) suggest that the impact of sentiment may vary across different market regimes (bull or bear) and firm characteristics. Additionally, some studies, like Baker and Wurgler (2011) and Schmeling (2009), highlight the role of global and local sentiment in predicting market returns across different countries. However, the literature review discusses various methodological approaches, including principal component analysis, GARCH models, panel regressions, and vector autoregression models, among others, to analyze the relationship between investor sentiment and stock market performance. Finally, the empirical literature broadly supports the findings of the PMG/ARDL model, which suggests a long-run positive relationship between the independent variables (MBR, SHP, and PER) and the dependent variable (SMR). However, the short-run dynamics and the significance of individual variables may vary across different studies and methodologies, as evident from the diverse findings in the literature review.

Conclusion and Recommendations

The study provide compelling evidence that investor sentiment, as measured by market-to-book ratio, share price, and price-earnings ratio, exerts a significant positive influence on stock market returns in Nigeria in the long run. The presence of a negative and statistically significant error correction term substantiates the existence of a long-run equilibrium relationship between the variables. This implies that any deviations from the equilibrium path are gradually corrected over time, ensuring the restoration of equilibrium in the long run. Therefore, the following recommendation was made: (a). Investors operating in the Nigerian stock market should incorporate the market-to-book ratio, share price, and price-earnings ratio as crucial indicators of investor sentiment into their investment decision-making processes. By carefully monitoring and interpreting these proxies, investors can gain valuable insights into the prevailing market sentiments and adjust their investment strategies accordingly, potentially enhancing their risk-adjusted returns and portfolio performance. (b). Policymakers and regulatory authorities in Nigeria should proactively monitor and address factors that influence investor sentiment, given its significant impact on stock market performance. Implementing measures to promote market transparency, enhance information dissemination, and foster investor confidence can contribute to market stability and efficiency. Additionally, regulatory frameworks should be periodically reviewed and updated to mitigate the potential adverse effects of excessive investor sentiment on market dynamics. (c). To empowers investors and promotes informed decision-making, concerted efforts should be made to implement comprehensive investor education programs. These programs should focus on enhancing financial literacy, teaching investors how to interpret market indicators,

and developing strategies to manage the influence of sentiment on investment decisions. By equipping investors with the necessary knowledge and skills, they can become more rational and disciplined in their investment approach, thereby mitigating the potential negative consequences of irrational sentiment-driven behavior.

References

- Alajekwu, E. C., Obialor, S. N., Okoro, F. C., & Ibenta, C. C. (2017). Investor sentiment and stock market performance in Nigeria: A time series analysis, *Journal of Finance and Economic Analysis*, 20(2), 1-20.
- Baker, M. P., & Wurgler, J. (2006). Investor sentiment and the cross-section of stock returns, *The Journal of Finance*, 61(4), 1645-1680.
- Baker, M. P., Wurgler, J. A., & Yuan, Y. (2011). Global, local, and contagious investor sentiment, *Journal of Financial Economics*, 104(2), 272-287.
- Baker, M., & Wurgler, J. (2007). Investor sentiment in the stock market, *Journal of Economic Perspectives*, 21(2), 129-151.
- Chen, L., Wang, X., & Zhang, X. (2021). Investor sentiment and stock market performance: Evidence from emerging markets, *Emerging Markets Review*, 47, 100864.
- Cheng, I. H. (2019). Investor sentiment and stock market performance: Evidence from China. *Journal of Behavioral and Experimental Finance*, 21, 100447.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. In J. L. Bicksler (Ed.), *Capital market* (pp. 41-82). Lexington, MA: Lexington Books.
- Fama, E. F. (1976). *Foundations of finance: Portfolio decisions and security prices*. New York: NY: Basic Books.
- Gunathilaka, M. D. S. D., Ranasinghe, P. K. R., & Gunawardana, A. (2022). The impact of investor sentiment on corporate social responsibility and financial performance: Evidence from the United States, *Journal of Business Ethics*, 175(1), 127-145.
- Guo, Q. (2023). The relationship between investor sentiment and stock market price. *Frontiers in Business, Economics and Management*, 9(2).
- Haritha, H., & Rashid, A. (2020). An empirical examination of investor sentiment and stock market volatility: Evidence from India, *Financial Innovation*, 6, 34. <https://doi.org/10.1186/s40854-020-00198-x>

- Holthausen, R. W., & Watts, R. L. (2001). The relevance of the value-relevance literature for financial accounting standard setting, *Journal of Accounting and Economics*, 31(1-3), 3-75.
- Jain, P., Kaur, S., & Garg, P. (2022). Impact of investor sentiment on stock market volatility in India: A nonlinear approach, *Journal of Behavioral and Experimental Finance*, 30, 100565.
- Hu, J., Sui, Y., & Ma, F. (2021). The measurement method of investor sentiment and its relationship with stock market. *Computational Intelligence and Neuroscience*, 2021, Article 6672677. <https://doi.org/10.1155/2021/6672677>
- Keane, S. M. (1983). *Stock market efficiency: Theory, evidence and implications*, Deddington, Oxford: Phillip Allen.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques (2nd ed.)*, New Delhi: New Age International Publishers.
- Kothari, S. P. (2001). Capital markets research in accounting, *Journal of Accounting and Economics*, 31(1-3), 105-231.
- Matovu, D. (2020). *Macroeconomic variables and stock market returns: Evidence from Norway and Denmark (Master's thesis)*, NORD University, Norway.
- Naseem, S. D. (2020). *Impact of macroeconomic variables on stock market: Evidence from emerging market and developed market (Doctoral dissertation)*, Capital University of Science and Technology, Islamabad, Pakistan.
- Nwari, N. O., & Olula, J. O. (2021). The role of investor sentiment on stock prices in Nigeria: A co-integration approach, *Journal of Financial Management and Analysis*, 30(2), 1-18.
- Pandey, N., & Sehgal, V. K. (2019). The impact of investor sentiment on stock returns in India: Evidence from the NSE500 index. *Journal of Financial Economic Studies*, 26(3), 157-170.
- Sharpe, W. F. (1985). *Investments (3rd ed.)*. Englewood Cliffs, NJ: Prentice Hall.
- Umar, A. A., Adegbite, O., & Asongu, S. A. (2019). The impact of investor sentiment on stock returns in Nigeria: Evidence from a GARCH model, *Journal of African Business*, 20(1), 110-132.
- Uygun, U., & Tas, O. (2012). Modeling the effects of investor sentiment and conditional volatility in international stock markets, *Journal of Applied Finance & Banking*, 2(5), 239-260.

Zhang, X., Bissoondoyal-Bheenick, E., & Zhong, A. (2023). Investor sentiment and stock market anomalies in Australia, *International Review of Economics & Finance*, 86, 284-303.

Zhang, C. (2008). *Defining, modelling, and measuring investor sentiment (Doctoral dissertation)*. University of California, Berkeley, USA.

Zhang, G. (2009). Informational efficiency of credit default swap and stock market: The impact of adverse credit events, *Accounting, Banking and Finance*, 1(1), 1-15.