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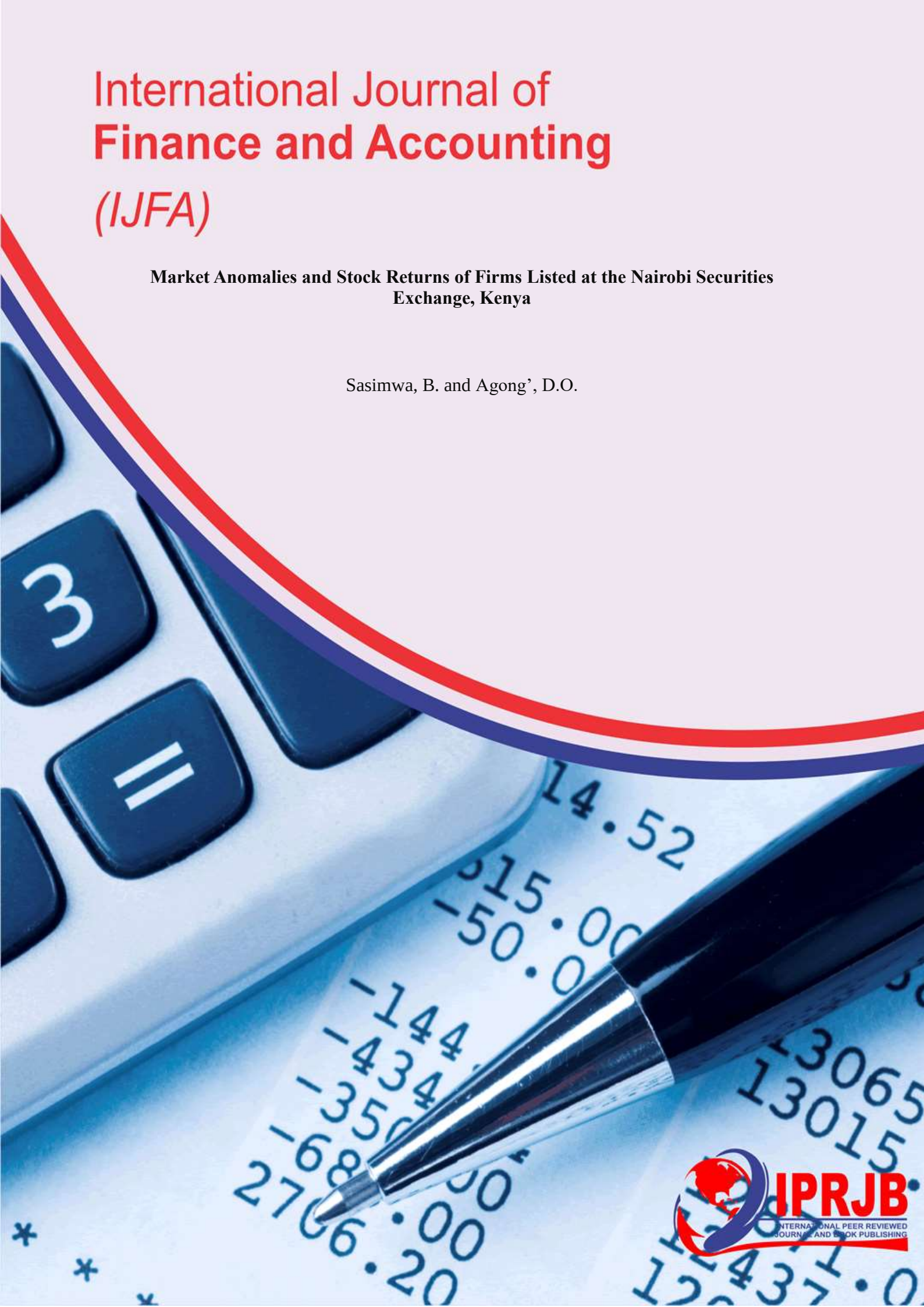

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Market Anomalies and Stock Returns of Firms Listed at the Nairobi Securities Exchange, Kenya

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Abstract

Purpose: Many researchers, both globally and locally, have demonstrated that stock markets are inefficient, as investors can rely on market anomalies to gain abnormal returns. Despite theoretical predictions of the EMH, empirical evidence suggests that returns in emerging markets may exhibit predictable patterns influenced by anomalies. This study, therefore, sought to establish the effect of market anomalies on the stock market returns among companies listed at the Nairobi Securities Exchange. The main objective of the study was to determine the effect of seasonal anomalies and technical anomalies on the stock market return among Companies listed at the NSE in Kenya.

Methodology: The study population was for a period of 7 years, from 2018 to 2024. Secondary data was obtained from the NSE database. All the data collected was first input into an Excel sheet and then analyzed using Stata version 20 software. Characteristics of the data for each market anomaly were analyzed using descriptive statistics, and then inferential statistics using the correlation analysis and panel regression model.

Findings: The panel regression results indicated that all the independent variables had a statistically significant effect on stock market returns with seasonal anomalies ($\beta = 0.0947$, $p = 0.0041$) and technical anomalies ($\beta = 0.1365$, $p = 0.0185$). From the findings, technical anomalies had the strongest influence, followed by seasonal. The model explained approximately 50.9% of the variation in stock returns, indicating that market anomalies play a significant role in determining stock performance. The study concludes that the NSE is characterized by partial market inefficiency, where both fundamental and behavioral factors influence stock returns. The findings imply that investors can exploit market anomalies to enhance returns, although the overall market performance remains weak.

Unique Contribution to Theory, Practice and Policy: The study recommends that investors adopt integrated investment strategies combining fundamental analysis, technical analysis, and timing strategies, while policymakers should enhance market efficiency, transparency, and investor protection. Further research is recommended to incorporate additional variables such as macroeconomic factors and behavioral elements to explain the remaining variation in stock returns.

Keywords: *Market Anomalies, Stock Returns, Nairobi Securities Exchange, Kenya*

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INTRODUCTION

The question about the predictability of stock returns continues to baffle economists, as theoretical models often diverge from empirical realities. This puzzle is particularly relevant because investors' fundamental goal is the maximization of wealth, and the ability to anticipate return patterns provides an avenue to achieve superior portfolio performance (Mugenda, Olweny, Wepukhulu, 2021). Thus, the ongoing debate over stock return behavior is not merely academic but has profound implications for both investment strategy and the efficiency of capital markets. In emerging economies such as Kenya, where capital markets play a vital role in channeling savings into productive investment, the behavior of stock returns directly shapes investor participation, corporate financing, and ultimately economic growth (Mburu & Iraya, 2019)

Jabeen (2022) defines stock market returns as the financial gains or losses realized by an investor from holding a particular equity over a specified period, encompassing both capital gains and income received from the asset, such as dividends or rights issues. According to Ahmed (2018), stock market returns are the profits that the investor gets from trading shares. According to Mugambi and Okech (2016), stock market return is the benefit or forfeiture of the value of a share in a particular period, usually quoted as a percentage. It consists of capital gains as well as any income received by the investor from the stock. Management decisions are at the heart of a firm's strategic direction, operational efficiency, and long-term survival. These decisions are shaped by a dynamic interplay of both internal and external factors and the broader economic environment.

Importantly, these elements do not exist in isolation; they interact continuously and can collectively influence the firm's returns (Habib 2020). According to Isayas (2021), the relationship between management decisions and stock market returns plays a pivotal role in shaping managerial decision-making processes. These decisions often interact to create a fragile operating environment. When external economic pressures are introduced, firms lacking robust decision-making frameworks are pushed into distress. Murigi (2025) underscores the importance of understanding how these forces intersect to offer a valuable insight into the health and future trajectory of any organization, particularly within the context of NSE, Kenya.

The rational paradigm of asset pricing theories prescribes that riskier assets should command higher returns. Existing theories, however, leave unexplained a host of empirically documented cross-sectional patterns in stock returns, classified as anomalies Bennett, 2023). According to Shehadeh (2023), specifically, literature has shown that, in the cross-section, future stock returns are related to past returns. Roche (2021) defines market anomalies as predictable patterns in stock prices that deviate from the efficient market hypothesis (EMH) and can lead to opportunities for traders to generate above-normal returns. According to Bennett (2023), market anomaly refers to a price pattern that is not in conformity with the traditional forecasts of market efficiency, logical expectations, and asset pricing theory.

Seasonal anomalies are recurring patterns in stock returns that correspond to specific periods, such as days of the week, months, or holidays, which cannot be fully explained by fundamental information or risk factors (Dua 2021). By demonstrating that returns can be consistently greater or lower over particular periods, these anomalies cast doubt on the EMH. Their tenacity is demonstrated by empirical research in emerging markets. For example, Mazviona et al. (2021) noted comparable trends in South Africa's JSE, while Onuko (2020) documented weekend, turn-of-the-month, and holiday effects in Nairobi Securities Exchange returns.

Seasonal anomalies are still important in many emerging contexts, according to Gbeda and Peprah (2018), even though some markets, such as Ghana's GSE, exhibit less day-of-the-week impact.

Technical anomalies are recurring patterns in stock returns that can be identified using historical price and volume data, challenging EMH, which posits that asset prices fully reflect all available information (Roche 2021). Such phenomena as momentum, reversal, overreaction, and underreaction effects are examples of these anomalies. More knowledge regarding these trends has been revealed by recent empirical research. In a study published in 2023, for example, Rink examined 6,406 technical trading rules in 23 established and 18 emerging markets over 66 years. Although several technical criteria fared better than straightforward buy-and-hold strategies at times, the results showed that over time, particularly in developed markets, their predictive power decreased. This shows that although there could be technical anomalies, they are not very persistent and are influenced by variables like market efficiency and transaction costs.

Market anomalies are the missing piece in the management distress puzzle. They transform routine strategic missteps into existential threats for firms with fragile governance, misaligned ownership, or poor risk controls Bennett, 2023).In an environment like the NSE, where market inefficiencies are more pronounced due to lower liquidity, thinner disclosure, and investor behavior, these anomalies can significantly distort financial signals and affect decision-making quality (NSE, 2023). In efficient markets, returns are expected to reflect all available information, implying that price changes should be random and unpredictable (Fama, 1970). However, empirical evidence from both developed and emerging economies increasingly documents patterns of abnormal returns that cannot be fully explained by conventional risk–return relationships (Hou, Xue & Zhang, 2020). More studies confirm that such anomalies persist, albeit with varying strength depending on market maturity, liquidity, and regulatory frameworks (Amel-Zadeh et al., 2023). This dynamic highlights why studying market anomalies alongside stock market returns fills a critical knowledge gap. Consequently, there is limited understanding of whether these anomalies persist after controlling for broader market risk factors, liquidity constraints, and structural changes in the Kenyan financial sector.

Statement of the Problem

The returns of a security market are an important element in any financial market as they play an important role in providing alternative investment opportunities for both local and international participants in an economy (Kasidi 2022). However, from 2018 through 2024, many firms listed on the NSE have exhibited declining or sharp volatility of market returns, undermining investor wealth and confidence (NSE 2019 – 2024). The year-by-year trends in the average returns reveal a pattern of volatility and uneven performance across the period. For instance, in 2018, 2019, and 2020, NSE (2020 – 2022) reports a strong dip in the overall average return of 6.23%, 5.87%, and 4.80%, respectively. Many NSE-listed firms reported reduced earnings, dividend cuts, and heightened uncertainty, all of which collectively contributed to the lower average returns. In 2021, the overall return rebounded to 7.89%, reflecting recovery from pandemic-related shocks (NSE 2023). However, in 2022, the average dropped to 5.80%, attributed to dollar scarcity and the weakening of the Kenyan shilling, thus reducing Kenya’s attractiveness to foreign investors. The further decline in 2023 to 4.82% and in 2024 to 3.80% underscores persistent challenges, particularly witnessed in industrial and manufacturing stocks (NSE 2024). A review of NSE-listed firms reveals a downward trend in returns from 2018 to 2024. In 2018, Kenya Power, Bamburi Cement, HF Group, Sameer

Africa, Britam Holdings, Sanlam, Deacons, and UAP issued profit warnings, while Uchumi Supermarkets posted a –56.3% return, with large losses also seen in Nairobi Business Ventures, Bamburi Cement, and BAT (NSE, 2019). By 2023, major blue-chip firms recorded pronounced declines: Safaricom (–42.2%), KCB (–42.9%), and EABL (–32.9%), accompanied by significant investor sell-offs in Safaricom, BAT, Co-operative Bank, Sameer Africa, and Britam Holdings, reducing trading volumes and firm valuations (NSE, 2024). These year-by-year declines, combined with sharp volatilities and widening dispersion, highlight the need to incorporate anomaly indicators into market returns prediction. Moreover, existing research offers no clear consensus, as findings vary widely. For instance, Roche (2021), Githinji and Mugo (2021), and Abdulrahman and Ouma (2019) find a significant positive relationship, whereas Obonyo and Jagongo (2021) and Mwita and Muturi (2020) observe a negative association. Meanwhile, Mutua and Olweny (2020) and Wachira & Wepukhulu (2021) report no statistically significant effects for most NSE-listed firms. Globally, similar studies reveal a geographical gap, with Asness, Frazzini, and Pedersen (2020) in the U.S., Harvey, Liu, and Zhu (2020) in China, and Daniel and Titman (2019) in the U.K. Kurtis provides a contextual void since previous studies have been carried out in economies other than Kenya. Against this backdrop, the present research sets out to test whether and how specific market anomalies statistically explain variations in stock market returns among NSE-listed firms in Kenya, By quantifying this link, the study aims to equip boards, investors, and regulators with actionable tools to pre-empt and, stabilize Kenya's corporate sector, and, by extension, safeguard the country's economic-growth agenda.

Objectives of the Study

This section provides an outline of the study objectives, which are divided into general and specific objectives

General Objective

The general objective was to study the effect of market anomalies and stock market returns of firms listed at the Nairobi Securities Exchange, Kenya.

Specific Objectives

i. To study the effect of seasonal anomalies on the market returns of firms listed at the NSE, Kenya

ii. To determine the effect of technical anomalies on the market returns of firms listed at the NSE, Kenya

Hypotheses of the Study

The research tested the following null hypotheses:

$H0_1$: Seasonal anomalies have no significant effect on the market returns of firms listed at the NSE, Kenya

$H0_2$: Technical anomalies have no significant effect on the market returns of firms listed at the NSE, Kenya

Theoretical Review

This section captures the theoretical review and empirical review of selected studies done before on the same topic.

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Behavioral Finance Theory

Behavioral Finance Theory was proposed by Kahneman and Tversky in 1979. According to the theory, irrational trading patterns around particular dates might result from investors' inclinations to be swayed by psychological biases, heuristics, and herd behavior. Human behavior has a part in financial markets, according to behavioral finance theory. Behavioral finance theory questions the conventional wisdom in finance that markets are efficient and that investors are completely rational. (Shiller, 2003; Barberis & Thaler, 2003) Rather, it asserts that social elements, emotions, and psychological biases impact investor decision-making and market results. The theory integrates ideas from economics and psychology to explain why investors frequently act irrationally, resulting in anomalies including momentum, overreaction, underreaction, and seasonal effects in stock returns.

Therefore, by recognizing that market participants are not always logical or well-informed, behavioral finance offers a more realistic understanding of market dynamics (Brooks 2008). According to Simon (1955), behavioral finance assumes that investors are boundedly rational, which means they make judgments based on partial knowledge and little cognitive processing. Heuristics, like mental shortcuts, have an impact on investors and can lead to systematic mistakes. Overconfidence, herding behavior, loss aversion, and framing effects are important psychological biases (Kahneman & Tversky, 1979; Barberis, Shleifer & Vishny, 1998). Because mispricing can happen when collective investor behavior diverges from rational expectations, these assumptions suggest that markets are not entirely efficient.

Despite its explanatory power, Behavioral Finance has been critiqued for several reasons. According to Rabin (1998), psychological biases can show up differently in different people and market situations, which is why they frequently lack predictive precision. Furthermore, many behavioral research studies depend on historical or experimental data, which cannot adequately represent intricate market dynamics. Third, since psychological aspects are subjective, it is difficult to include behavioral explanations into quantitative asset pricing models, according to critics (Barberis & Thaler, 2003). However, these criticisms do not lessen its value in elucidating noted market irregularities.

Behavioral Finance has been widely applied to understand investor behavior, asset pricing, and market anomalies. The disposition effect, in which investors sell winners too soon and keep losers too long, herding behavior during market bubbles, and overreaction or underreaction to news are a few examples (Odean, 1998; Barberis & Thaler, 2003). Additionally, by emphasizing how human psychology influences financial decisions, the theory has influenced risk assessment, portfolio management techniques, and regulatory legislation. In emerging markets, where behavioral biases and informational inefficiencies are more prevalent, it is especially pertinent (Baker & Nofsinger, 2010).

Behavioral Finance provides a plausible explanation for seasonal anomalies such as the January effect, day-of-the-week effect, and turn-of-the-month effect. These anomalies arise as a result of the behavioral patterns and psychological biases of investors that affect trading decisions at specific periods. For example, year-end portfolio rebalancing and tax-loss selling can produce predictable patterns in stock returns, and trading volume and price movements can be influenced by mood and optimism at particular times (Keim, 1983; Agrawal & Tandon, 1994). The behavioral underpinnings of seasonal anomalies are highlighted by these characteristics, which cast doubt on the idea of totally efficient markets and are explained by ideas like herding,

overreaction, and mood. The theory was utilized to explain the effect of seasonal anomalies and share returns of firms listed at the NSE, Kenya.

Prospect Theory

Prospect Theory was formulated by Kahneman and Tversky in 1979. The theory explains how people assess possible gains and losses in risky and volatile circumstances. Prospect Theory acknowledges that people value gains and losses differently and have systematic biases in decision-making, in contrast to classical anticipated utility theory, which makes the assumption that people are rational and only consider outcomes in terms of their ultimate worth. This theory holds that people and speculators view wins and losses differently, and that when offered a choice between gains and losses, perceived gains typically prevail (Tversky & Kahneman, 1992). This approach has been widely used to explain asset pricing patterns, market oddities, and investor behavior that traditional models are unable to explain.

The core assumptions of Prospect Theory include loss aversion, diminishing sensitivity, and probability weighting. Loss aversion is the idea that investors experience losses more strongly than comparable profits, which encourages them to act risk-aversely when they could lose money (Kahneman, 2013; Rabin, 2000). When the magnitude of the gain or loss grows, the perceived impact of changes in wealth is said to diminish. Investors may misjudge risk and possible outcomes by underweighting moderate-to-high probability events and overweighting low-probability ones, according to probability weighting (Kahneman & Tversky, 1979; Barberis, 2013). When taken as a whole, these presumptions explain why investors may act differently from traditional rational models, including the CAPM.

Despite its influence, Prospect Theory has faced several critiques. Researchers contend that in intricate financial markets with numerous variables interacting at once, prospect theory has little forecasting ability. Because the reference point can vary from person to person and from context to context, it is also difficult to quantify. It is also challenging to integrate the theory with conventional asset pricing models due to its descriptive nature and emphasis on individual-level behavior rather than overall market results (Barberis, 2013; Rabin, 2000). These criticisms haven't, however, lessened its usefulness in illuminating financial market behavioral anomalies.

In behavioral finance, prospect theory has been widely used to explain market anomalies and investor behavior. Prospect Theory has been widely applied to explain technical anomalies, which are patterns in stock returns that deviate from predictions of the efficient market hypothesis (Kahneman 2013). For example, the momentum effect, where past winners continue to outperform, can be attributed to investors' overweighting of recent gains, leading them to chase trends (Odean, 1998). Conversely, reversal effects, where past losers outperform, arise from loss aversion: investors are reluctant to realize losses, causing underpriced stocks to remain undervalued temporarily. Calendar anomalies, such as the day-of-the-week effect or turn-of-the-month effect, can also be explained through mood and behavioral patterns, as investors' decisions are influenced by psychological and temporal factors (Keim, 1983; Agrawal & Tandon, 1994).

Empirical evidence from emerging markets supports these links. In Kenya, Onuko (2020) documented weekend and turn-of-the-month effects in NSE returns, consistent with behavioral explanations rooted in Prospect Theory. In South Africa, Mazviona et al. (2021) found that short-term momentum and reversal patterns on the JSE were influenced by investor sentiment and overreaction, aligning with Prospect Theory predictions. These findings illustrate that

investor psychology, as modeled by Prospect Theory, directly contributes to the persistence of technical anomalies, especially in markets with lower informational efficiency.

Conceptual Framework

The conceptual framework depicts the relationship between the independent variables and the dependent variable under study.

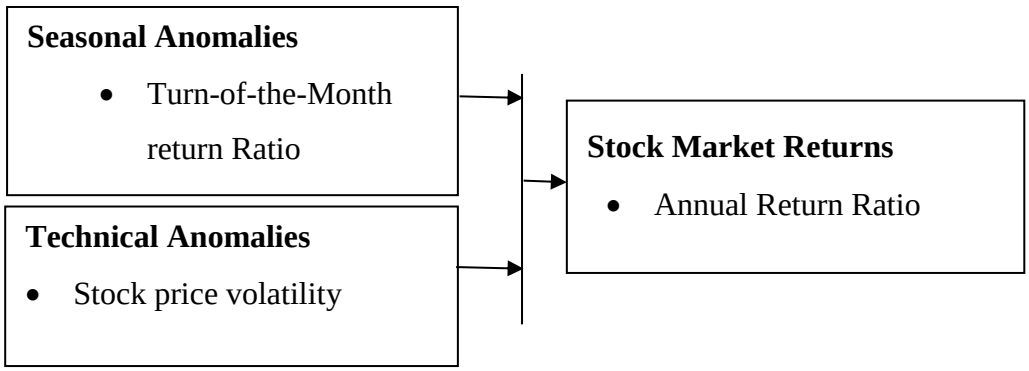

Figure 1: Conceptual Framework

Empirical Review

The empirical literature is derived from or relates to experiment and observation rather than theory.

Seasonal Anomalies and Stock Market Returns

Valadkhani (2024) conducted a comprehensive study on sector-specific seasonal anomalies in the U.S. equity market. The study used a cross-sectional regression design to examine nine sector ETFs' daily closing prices from January 2000 to December 2022. The regression model was modified to include calendar dummy variables that represented days and months in order to identify statistically significant trends in sector returns. According to the analysis, there are ongoing seasonal anomalies at the sectoral level because eight of the nine sectoral ETFs continuously showed positive returns in April, November, and/or December. These results cast doubt on the conventional understanding of market efficiency by indicating that seasonal abnormalities exist within specific sectors as well as in broad market indexes.

Mazviona et al. (2021) conducted a study on seasonal anomalies on daily returns across various JSE indices. The study included the Top 40, All Shares, and sector-specific indices to investigate the presence of seasonal anomalies. Panel data analysis of the South African stock market, spanning 1995 to 2018, was employed in the study. The study found a number of recurring trends using a regression model that included calendar dummy variables for Mondays, the beginning and end of the month, returns before and after holidays, and monthly impacts. Significantly, market returns and seasonal anomalies were positively impacted. These findings challenged the Efficient Market Hypothesis and showed possible avenues for investors to take advantage of market inefficiencies by demonstrating that the South African market exhibits predictable patterns.

Onuko (2020) conducted a study on the effect of seasonal anomalies on the stock market returns among companies listed at the Nairobi Securities Exchange. The study sampled the closing prices of the NSE-20 share index across ten years, from 2000 to 2019. The Nairobi Securities

Exchange database provided the data, which was then entered into an Excel spreadsheet and examined using Stata version 12 software. Descriptive statistics were used to assess the data's characteristics, followed by the EGARCH (1, 1) model and the mean and variance equation results. To make sure the linearity assumptions were met, the study performed diagnostic tests, which included the normalcy test, ARCH effect test, stationarity test, and autocorrelation test. The results showed that seasonal anomalies and share returns of companies listed on the Kenyan National Stock Exchange (NSE) had a favorable and significant impact.

Technical Anomalies and Stock Market Returns

Benfeddoul and Asmâa Alaoui Taïb (2024) explored the effect of technical anomalies on the Moroccan Stock Market. The study examined the impact of technological abnormalities on non-financial companies in the Moroccan stock market between July 2001 and June 2020. Using daily stock return data and fixed-effects regression models in conjunction with the system generalized method of moments (SGMM), the researchers used a quantitative study strategy to examine the association between different fundamental ratios and stock returns. On the other hand, the analysis found a substantial inverse link between returns and technical anomalies.

Ajadi (2023) investigated the technical anomalies and returns in the Nigerian Stock Exchange (NGX) over the period 1996–2016, using a quantitative research strategy that is founded on time-series return analysis and portfolio development. The findings, which highlighted the conditional nature of technical anomalies in emerging markets, were based on secondary data from the NGX on the stock returns of listed firms. They showed that technical anomalies were profitable in Nigeria, but that their performance was highly state-dependent, with stronger returns during bullish and liquid market conditions and weaker or even negative outcomes during bearish or illiquid periods.

Roche (2021) sought to study the effect of size effect anomalies on the financial distress of listed firms in the NSE, Kenya. The study used positivist research methods and a descriptive research design. It took into account all 67 listed companies on the NSE that held a CMA license as of January 1, 2017, which made up the target population. The study used secondary data that was taken from individual companies' audited financial accounts during the eleven years from 2007 to 2017. The study used a panel data model. The E View statistical program was used for data analysis and display, and the p-value was used for hypothesis testing. A multivariate method called the Z-score was used as the financial forecast model. The findings showed that there were weak negative correlations between technical anomalies and the financial distress of firms listed at the NSE. Kenya.

METHODOLOGY

A quantitative research design was used to identify characteristics, patterns, and trends in market anomalies and stock market returns.The target population of the study comprised all sixty-two (62) companies listed at the Nairobi Securities Exchange (NSE) in Kenya, as of 2024 (NSE, 2025 Report).This study adopted a census approach in which all sixty-two (62) firms listed at the NSE as of 2024 will be included in the analysis (NSE, 2025 Report).The study was conducted for a period of seven years, between 2018 and 2024. The researcher extracted and compiled the necessary secondary data from the financial statement using a secondary data collection sheet. A secondary data report was obtained from the financial institution's published sources, CMA, CBK, KNBS, and other government records to aid in the accomplishment of the specific study objectives.

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The study data was analyzed using descriptive and inferential statistics. The descriptive statistics included mean, minimum, maximum, standard deviations, skewness, and kurtosis. Inferential statistical tools will include Pearson's correlation analysis and the panel regression analysis.The study employed a panel regression model. The panel regression model is a combination of cross-sectional and time series data (Zulfikar, 2018) in which the data, including time series and cross-sectional data, are pooled into a panel data set and estimated using a panel data regression.

The study will employ a panel regression model in the form below.

$$Y_{it}=\beta_0+\boldsymbol{\beta_1 S_{it}} + \boldsymbol{\beta_2 T_{it}} +\boldsymbol{\varepsilon}$$

Where;

$\boldsymbol{Y_{it}}$ = Stock market returns for NSE i at time t

β_0 = Constant,

$\boldsymbol{S_{it}}$ = Seasonal anomalies for NSE i at time t

$\boldsymbol{T_{it}}$ = Technical anomalies for NSE i at time t

$\boldsymbol{SE_{it}}$ = Size effect anomalies for NSE i at time t

β_1, β_2, = Regression Coefficients of variables

FINDINGS AND DISCUSSIONS

This section presents the data analysis, results, and discussion of the study on the effect of market anomalies on stock market returns of firms listed at the NSE, Kenya.

Descriptive Statistics

Descriptive statistics provide an initial overview of the central tendency, dispersion, and distribution of the study variables, offering insights into the characteristics of stock returns and market anomalies for NSE-listed firms.

Table 1: Descriptive Statistics

Statistics	N	Min	Max	Mean	Std. Dev.	Skewness	Kurtosis
Stock Market Returns	62	–0.5632	0.4728	-0.0531	0.1324	-0.4183	2.9812
Seasonal Anomalies	62	0.8204	1.2497	1.0302	0.1105	0.6137	3.2389
Technical Anomalies	62	0.1205	0.7801	0.3604	0.1402	0.8801	3.8721

The minimum return of –0.5632 (–56.32%) indicates that some NSE-listed firms experienced extremely large losses during the study period. Conversely, the maximum return of 0.4728 (47.28%) shows that a few firms achieved exceptionally high returns, suggesting that pockets of strong performance existed within the market. The descriptive statistics results show an overall mean return of –0.0531 (–5.31%), indicating that, on average, investors experienced negative returns from NSE-listed firms over the study period. This suggests that the market generally collapses the shareholder value rather than generating gains, highlighting the declining performance that motivates the current study. This result indicates that the profitability of NSE-listed firms weakened considerably during the study period, reinforcing concerns regarding declining market performance. The standard deviation of 0.1324 indicates considerable variability in stock returns among NSE-listed firms. This suggests that firm performance varied substantially across the market, reflecting differences in financial strength, industry conditions, and management efficiency.

The distribution of stock market returns is slightly asymmetric, as indicated by the negative skewness value of –0.4183, suggesting that extreme negative returns occur more frequently than extreme positive returns. Meanwhile, the kurtosis value of 2.9812, which is very close to the normal distribution benchmark of 3, indicates that the distribution of returns is approximately mesokurtic, meaning that extreme values occur at a rate similar to a normal distribution (Gujarati & Porter, 2020). Overall, these results indicate that NSE-listed firms experienced negative average returns, significant variability in performance, and a declining trend in market profitability over the study period. These findings therefore justify the need to investigate market anomalies as potential determinants of stock market returns. The results are consistent with findings by Mutua and Olweny (2020) and Waweru and Kalunda (2019), who reported that stock returns in the Kenyan equity market often exhibit high volatility and periods of negative performance due to market inefficiencies and firm-specific challenges. Similarly, Harvey, Liu, and Zhu (2020) note that anomaly-driven markets, particularly in emerging economies, frequently experience irregular return patterns and declining performance due to informational inefficiencies.

Regarding seasonal anomalies, the descriptive results yielded a mean of 1.0302, suggesting that, on average, NSE-listed firms experience slightly higher returns around the turn of the month. This implies that calendar effects influence investor behavior, with certain periods offering opportunities for marginally higher returns. The minimum (0.8204) and maximum (1.2497) show that the effect varies across firms and periods, reflecting inconsistent patterns. A standard deviation of 0.1105 for the Turn-of-the-Month ratio indicates mild dispersion around the mean of 1.0302. This implies that while seasonal effects exist, they are relatively consistent across firms and periods, offering predictable short-term patterns for tactical trading. This implies that investors can use this consistency to plan timing-based investment strategies (Uluyol, 2023; Roche, 2021). Skewness of 0.6137 and kurtosis of 3.2389 slightly exceed the normal distribution thresholds (skewness ±0.5; kurtosis 3). This implies that seasonal anomalies deviate slightly from normality, signaling that month-end effects could create opportunities for investors but are not uniformly predictable (Uluyol, 2023; Roche, 2021).

Descriptive results of technical anomalies measured by indicate a mean of 0.3604, suggesting moderate fluctuations in stock prices among NSE-listed firms, reflecting that firms experience noticeable but manageable short-term price swings. The minimum value of 0.1205 indicates that some firms experienced very low price volatility, meaning their stock prices remained relatively stable throughout the period. In contrast, the maximum value of 0.7801 shows that other firms underwent extreme price swings, with large fluctuations in their share prices. This wide range implies substantial heterogeneity in technical behavior across NSE-listed firms, reflecting differences in firm size, liquidity, investor sentiment, and market reactions to news or corporate events (Bodie, Kane, & Marcus, 2021; Gujarati & Porter, 2020). The standard deviation of 0.1402 shows substantial variability around this mean, implying that while most firms exhibit moderate volatility, some experience extreme price changes. Skewness of 0.8801 suggests a moderately positive skew, indicating that large upward price swings occur more frequently than large downward swings. Kurtosis of 3.8721, above the normal threshold of 3, shows leptokurtic behavior, meaning the distribution has heavier tails and a higher probability of extreme values than a normal distribution (Gujarati & Porter, 2020).

Inferential Analysis

This section presents the inferential analysis of the study, examining the relationship between market anomalies and stock market returns of firms listed at the Nairobi Securities Exchange (NSE) for the period 2018–2024.

Correlation Analysis

Correlation analysis was conducted to examine the direction and strength of the relationship between stock market returns and the independent variables

Table 2: Correlation Matrix

Variable	Stock Market Returns	Seasonal Anomalies	Technical Anomalies
Stock Market Returns	1.0000		
Seasonal Anomalies	0.4123**	1.0000	
Technical Anomalies	0.4581**	0.2387*	1.0000

The findings indicate that seasonal anomalies have a moderate positive and statistically significant relationship with stock market returns (r = 0.4123). This implies that periods associated with calendar effects, such as the turn-of-the-month, are linked with relatively higher returns. The findings are consistent with Roche (2021) and Uluyol (2023), who posit that timing strategies based on predictable seasonal patterns positively influence stock returns in emerging markets.

Model Summary

This section presents the model summary results based on the Random Effects panel regression model used to examine the effect of market anomalies on stock market returns of firms listed at the NSE for the period 2018–2024.

Table 3: Model Summary

Statistic	Value
Number of Observations (N)	434
Number of Groups (Firms)	62
R-squared (Overall)	0.509
R-squared (Within)	0.472
R-squared (Between)	0.538
Wald Chi-square (χ^2)	112.684
Prob > χ^2	0.0000

The results indicate that the Random Effects model provides a good fit to the data, with an overall R-squared of 0.509, implying that approximately 50.9% of the variation in stock market returns among NSE-listed firms is explained by seasonal anomalies, and technical anomalies. This suggests that market anomalies play a significant role in explaining stock return behaviour, although 49.1% of the variation remains unexplained, likely due to other factors such as macroeconomic conditions and firm-specific dynamics. The within R-squared of 0.472 indicates that 47.2% of the variation in stock returns within firms over time is explained by the independent variables. This implies that changes in market anomalies across the study period significantly influence firm-level stock performance, supporting the dynamic nature of anomaly effects.

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The between R-squared of 0.538 shows that 53.8% of the variation in stock returns across firms is explained by the model. This suggests that cross-sectional differences among firms, such as size, valuation, and trading behavior, are important determinants of stock returns. This finding is consistent with Fama and French (2015), who emphasize the role of firm-specific characteristics in explaining return differences. The Wald chi-square statistic of 112.684 with a p-value of 0.0000 indicates that the model is statistically significant, meaning that the independent variables jointly have a significant effect on stock market returns. This confirms that the Random Effects model is appropriate and reliable for analysing the relationship between market anomalies and stock returns.

Analysis of Variance (ANOVA)

The Analysis of Variance (ANOVA) was conducted to assess the overall significance of the regression model in explaining variations in stock market returns among firms listed at the Nairobi Securities Exchange (NSE).

Table 4: ANOVA Results

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F-Statistic	p-value
Regression	3.8247	4	0.9562	28.734	0.0000
Residual (Error)	14.2873	429	0.0333		
Total	**18.1120**	**433**			

The ANOVA results in Table 4 indicate that the regression model is statistically significant in explaining stock market returns. The model yields an F-statistic of 28.734 with a p-value of 0.0000, which is less than the 0.05 level of significance. This implies that the null hypothesis that all regression coefficients are equal to zero is rejected. This finding indicates that the independent variables jointly have a significant effect on stock market returns among NSE-listed firms. In other words, the model provides a significantly better explanation of stock returns compared to a model with no predictors.

The relatively large regression sum of squares compared to the residual sum of squares suggests that a substantial proportion of the variation in stock market returns is explained by the model. This supports the earlier model summary results, which indicated a strong explanatory power of the independent variables. These findings are consistent with Xiao (2023) and Asness, Frazzini, and Pedersen (2020), who found that anomaly-based models are statistically significant in explaining stock return variations. Similarly, Mutua and Olweny (2020) reported that firm-level factors significantly influence stock performance in the NSE. However, the results contradict Wachira and Wepukhulu (2021), who found that market anomalies have limited joint explanatory power in the Kenyan stock market, suggesting that macroeconomic variables may play a more dominant role.

Regression Coefficient Results

This section presents the regression coefficient results of the Random Effects panel model used to examine the effect of market anomalies on stock market returns of firms listed at the NSE for the period 2018–2024.

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Table 5: Random Effects Regression Coefficients

Variable	Coefficient (β)	Std. Error	z-Statistic	p-value	95% Confidence Interval
Seasonal Anomalies	0.0947	0.0268	3.533	0.0041	-0.1543, -0.0513
Technical	0.1365	0.0341	4.002	0.0185	0.0697, 0.2033
Anomalies	-0.1028	0.0263	-3.908	0.0023	-0.1543, -0.0513
Constant					

Based on the Random Effects model, the estimated regression equation is:

$$Y_{it} = -0.1028 + 0.0947S_{it} + 0.1365T_{it}$$

Hypotheses Test Results

This section presents the results of hypothesis testing.Statistical significance was evaluated at the 5% significance level ($p < 0.05$), while 95% confidence intervals were used to confirm the reliability of the estimated coefficients. The results and decisions for each hypothesis are discussed below.

H_{01}: Seasonal Anomalies have no Significant Effect on the Stock Market Returns of Firms Listed at the NSE, Kenya

The first objective was to establish the effect of seasonal anomalies and stock market returns of firms listed at the NSE, Kenya. The null (H_{01}) hypothesis stated that seasonal anomalies have no significant effect on the stock market returns of firms listed at the NSE, Kenya. The findings in Table 5 indicate that seasonal anomalies had a coefficient value of $\beta = 0.0947$($p = 0.0041$) on stock market returns. This implies that a unit increase in seasonal anomaly effects leads to an increase in stock returns by 0.0947 units, suggesting that calendar-based trading strategies enhance investor returns. This finding indicates that the NSE exhibits exploitable patterns such as the turn-of-the-month effect. The increase will have a significant effect, given the p-values of 0.0041 (P>0.05). Therefore, the null hypothesis (H01) is rejected.

This result is consistent with Lobao (2019), Roche (2021), Onuko (2020), and Uluyol (2023), who found that seasonal patterns positively influence stock returns due to investor timing behavior. However, it contradicts Attílio (2026), Baldoni (2026), and Wachira and Wepukhulu (2021), who reported the negative effect of seasonal effects, suggesting that such anomalies may not always be stable across time. Carlson (2023), on the other hand, concludes that the existence of seasonal or calendar anomalies has always been considered to be non-existent of stock market efficiency and therefore has no significant effect on market returns.

H_{02}: Technical Anomalies have no Significant Effect on the Stock Market Returns of Firms Listed at the NSE, Kenya

Regarding the third objective, the study sought to establish the effect of technical anomalies and stock market returns of firms listed at the NSE, Kenya. The null (H_{03}) hypothesis stated that technical anomalies have no significant effect on the stock market returns of firms listed at the NSE, Kenya. The regression results revealed the coefficient values of 0.1365 ($p = 0.0185$). The results indicate that a change in price volatility and market trends significantly increases the stock market returns of firms listed at the NSE, Kenya. The results further suggested that technical anomalies exhibited the strongest positive and statistically significant effect on stock market returns. This suggests that price volatility and market trends are key drivers of stock performance, and that investors can exploit technical signals to generate higher

returns. Therefore, the null hypothesis (H03) was rejected, and the study concluded that technical anomalies significantly enhance the stock market returns of firms listed at the NSE, Kenya.

The findings are supported by similar studies conducted by Korsah and Mensah (2023), Dong et al. (2022), and Elotmani (2024), who argue that price movements contain predictive information about returns. Similarly, Sharma (2022) posits that technical anomalies have a major impact on price formation for financial instruments that are traded on stock exchanges and are able to offer investors higher earnings. Benfeddoul and Asmâa Alaoui Taïb (2024), Ajadi (2023), Roche (2021), and Mwita and Muturi (2020), however contradicts the finding and conclude that technical indicators had no significant effect on stock returns in diverse economic regions.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This section presents a summary of the key findings of the study, draws conclusions based on the results, and provides recommendations for policy and practice.

Summary

This section presents a summary of the key findings of the study based on the study objectives.

Seasonal Anomalies and Stock Market Returns of Firms Listed at the NSE, Kenya

The study established that seasonal anomalies have a positive and statistically significant effect on stock market returns among firms listed at the Nairobi Securities Exchange (NSE). The findings indicate that calendar-based patterns, particularly periods such as the turn-of-the-month, are associated with relatively higher stock returns compared to other trading periods. This suggests that investor behavior in the NSE is influenced by timing strategies, where trading activity tends to cluster around specific periods, leading to predictable return patterns. The presence of such seasonal effects demonstrates that the NSE is not fully efficient, as price movements reflect recurring patterns that can be systematically exploited. Additionally, the moderate strength of the relationship implies that while seasonal anomalies are important, they operate alongside other market factors in influencing stock returns.

Technical Anomalies and Stock Market Returns of Firms Listed at the NSE, Kenya

The results revealed that technical anomalies have a positive and statistically significant effect on stock market returns and represent the strongest determinant among the variables examined in the study. This indicates that stock price movements, volatility patterns, and trading signals play a dominant role in shaping returns in the NSE. The findings suggest that investor behavior is highly responsive to market trends, with many investors relying on historical price information and technical indicators when making trading decisions. This reflects the presence of behavioral biases such as herding and momentum trading, which contribute to predictable price movements. The strong influence of technical anomalies highlights the importance of short-term market dynamics and suggests that the NSE exhibits characteristics of a behaviorally driven market where price patterns significantly affect investment outcomes.

Conclusion

Based on the empirical findings of the study, several conclusions are drawn regarding the effect of market anomalies on the stock market returns of firms listed at the NSE.

Seasonal Anomalies and Stock Market Returns

The study concludes that seasonal anomalies have a positive and statistically significant effect on stock market returns, confirming the presence of calendar-based return patterns in the Nairobi Securities Exchange (NSE). This implies that stock prices are influenced by predictable timing effects, where certain periods consistently yield higher returns. Such behavior challenges the assumptions of the Efficient Market Hypothesis, particularly in its weak form, which assumes that past patterns cannot be used to predict future returns. The persistence of seasonal effects suggests that the NSE exhibits temporal inefficiencies, allowing investors to exploit timing strategies for abnormal gains. Therefore, the study concludes that investor behavior in the NSE is partly driven by systematic trading cycles, reinforcing the argument that emerging markets often display predictable anomalies due to information asymmetry and behavioral biases**.**

Technical Anomalies and Stock Market Returns

The study concludes that technical anomalies have the strongest positive and statistically significant effect on stock market returns, highlighting the dominant role of price movements, volatility, and trading patterns in determining stock performance in the NSE. This finding indicates that investor decisions are highly influenced by historical price behavior and market trends, rather than purely by fundamental information. The results strongly support the principles of Behavioral Finance, which emphasize the impact of investor psychology, herding behavior, and momentum trading on financial markets. The prominence of technical anomalies suggests that the NSE is characterized by behavior-driven trading, where market participants react to price signals, leading to predictable return patterns. Consequently, the study concludes that the NSE exhibits behavioral inefficiencies, making it possible for investors to exploit technical indicators to enhance returns.

Recommendations

Based on the study findings, the following recommendations are proposed to improve the stock market returns of firms listed at the NSE, Kenya

Seasonal Anomalies and Stock Market Returns

Given that seasonal anomalies have a positive and significant effect on stock market returns, the study recommends that investors incorporate calendar-based timing strategies in their investment decisions. Investors should monitor predictable trading periods such as the turn-of-the-month and other seasonal cycles to optimize returns. Portfolio managers and financial analysts are encouraged to integrate seasonal indicators into investment models to improve short-term trading performance. At the same time, market regulators should enhance information dissemination and market transparency to minimize predictable trading advantages that may arise from seasonal inefficiencies, thereby promoting a more equitable trading environment.

Technical Anomalies and Stock Market Returns

Since technical anomalies were found to have the strongest influence on stock market returns, the study recommends that investors and analysts incorporate technical analysis tools, such as trend analysis, moving averages, and volatility indicators, into their decision-making processes. Investors should leverage price patterns and market signals to identify profitable trading opportunities. However, given the potential for excessive speculation, regulators should implement measures to enhance market stability and reduce volatility, including monitoring

abnormal trading activities and strengthening market surveillance systems. This will help balance the benefits of technical trading with the need for a stable and efficient market.

Areas for Further Research

The findings of this study indicate that market anomalies explain approximately 50.9% of the variation in stock market returns, as reflected by the R-squared value of 0.509. This implies that 49.1% of the variation in stock returns remains unexplained, suggesting the presence of additional factors beyond seasonal, value, technical, and size anomalies. Based on this limitation, several areas for further research are proposed. First, future studies should incorporate macroeconomic variables such as inflation rates, interest rates, exchange rates, and gross domestic product (GDP) growth. These factors are known to influence stock market performance and may account for a significant portion of the unexplained variation in returns. Second, further research should examine the role of corporate governance and firm-specific characteristics, including board composition, ownership structure, leverage, and profitability. These variables may provide deeper insights into firm-level determinants of stock returns that were not captured in the current study.

Third, future studies could explore behavioral finance factors, such as investor sentiment, overconfidence, and herding behavior, to better understand how psychological influences contribute to market anomalies and stock return dynamics. Fourth, researchers are encouraged to conduct comparative studies across different stock markets, particularly within emerging and developed economies, to assess whether the effects of market anomalies observed in the NSE are consistent across different market environments. Fifth, future studies may consider using alternative methodological approaches, such as dynamic panel models, generalized method of moments (GMM), or nonlinear models, to capture more complex relationships between variables and improve the robustness of results. Finally, further research could extend the study period and increase the sample size to capture long-term trends and structural changes in the market. This would enhance the generalizability of findings and provide a more comprehensive understanding of stock market behavior.

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