

Testing Stock Market Anomalies in Nifty 50 Stocks: An Empirical Analysis in the Indian Context

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Abstract:- Stock market anomalies are persistent patterns in stock returns that traditional financial models cannot explain. Anomalies challenge the Efficient Market Hypothesis (EMH), which states that all information is reflected in stock prices. This research aims to test the stock market anomalies in Nifty 50 stocks in India. The study will use various statistical methods to examine a range of calendar anomalies. The findings of this study will have important implications for investors and policymakers. If anomalies are found to exist, investors may be able to generate abnormal returns by exploiting them. Policymakers may also be interested in understanding the causes of anomalies and their impact on the overall market. This process involves examining a large dataset of stocks within the Nifty 50 index to identify any patterns or trends that may be considered abnormal or unexpected. By conducting this analysis, investors and financial analysts can gain deeper insights into the behaviour of the stock market in India and make more informed investment decisions. This study is significant for several reasons: it is one of the few studies to examine stock market anomalies in the Indian market; the study uses comprehensive statistical methods to test for anomalies. The study is expected to find evidence of some stock market anomalies in Nifty 50 stocks. The study's conclusions will have an impact on investors and policymakers.

Keywords:- Stock Market Anomalies, Calendar Anomalies, Nifty 50 Stocks, Efficient Market Hypothesis, Abnormal Returns.

I. INTRODUCTION

In financial markets, anomalies present intriguing opportunities for investors to exploit and potentially generate abnormal returns. Despite the prevailing belief in market efficiency, a substantial body of research by academicians has delved into the examination of anomalies, mainly focusing on calendar anomalies. These anomalies highlight the significance of specific days or months in market returns or the performance of companies and benchmarks. This exploration seeks to challenge the conventional wisdom of Fama (1970), who argued that markets achieve informational efficiency when stock prices reflect all available information regarding future values. The ongoing research on anomalies

aims to demonstrate that stock markets may be inefficient, opening avenues for investors to gain a strategic edge.

A. Calendar Anomalies:

Calendar anomalies constitute a notable area of investigation within financial markets. Scholars and researchers have dedicated considerable effort to understanding and unravelling the patterns associated with specific periods, such as days or months, that seemingly influence market returns. Contrary to the efficient market hypothesis proposed by Fama, these anomalies suggest that there may be inefficiencies in the stock markets that can be exploited for abnormal returns.

One of the well-explored calendar anomalies is the January effect. The January effect posits that stock prices tend to experience abnormal increases in January. Researchers have attributed this phenomenon to various factors, including tax-loss selling in December, resulting in a temporary undervaluation of stocks that bounces back in the subsequent month. Investors recognising and acting upon the January effect could capitalize on this recurring market pattern to enhance their returns.

Similarly, the day-of-the-week effect is another calendar anomaly that challenges the efficient market hypothesis. This anomaly suggests that certain days of the week exhibit consistent patterns in stock returns. For example, the "Monday effect" proposes that stock prices are lower on Mondays than on other days. While the origins of such patterns may be elusive, investors who understand and leverage these anomalies stand to gain a competitive advantage.

B. Market Anomalies in the Indian Context:

In the dynamic landscape of the developing Indian economy, anticipating market anomalies has spurred many studies to scrutinise market efficiency. Researchers, including A. Sharma & Deo (2014), Parikh (2010), and Sathish (2013), have delved into investigations specifically focused on the Indian markets, examining the presence of month-of-the-year effects. Their collective findings shed light on inefficiencies within the Indian markets, indicating a month-of-the-year effect. Additionally, studies by researchers such as S Archana (2014), Sarma (2004), Swami (2012), and Nageswari & Selvam (2011) have probed into

day-of-the-week effects, collectively reinforcing the notion that anomalies persist within the Indian markets.

➤ *Month-of-the-Year Effects in Indian Markets:*

The exploration of month-of-the-year effects in the Indian markets has garnered significant attention from researchers aiming to decipher patterns and anomalies within the financial realm. Notable scholars, including A. Sharma & Deo (2014), Parikh (2010), and Sathish (2013), have meticulously investigated this aspect. Their research collectively suggests that the Indian markets do not conform to the principles of efficiency, revealing a discernible month-of-the-year effect.

Month-of-the-year effects refer to systematic patterns or market behaviour anomalies specific to certain months. In the context of the Indian economy, these effects manifest as irregular market returns, challenging the notion of a consistently efficient market. The findings of these studies underscore the importance of considering temporal factors when assessing investment strategies in the Indian context.

➤ *Day-of-the-Week Effects in Indian Markets:*

In tandem with month-of-the-year effects, day-of-the-week effects have also been scrutinized to unravel additional layers of market anomalies within India. Researchers such as S Archana (2014), Sarma (2004), Swami (2012), and Nageswari & Selvam (2011) have dedicated efforts to exploring and comprehending the influence of specific days on market returns.

Day-of-the-week effects propose that certain days exhibit consistent patterns in market behaviour. These anomalies challenge the concept of a completely efficient market by suggesting that market returns may be influenced by the day of the week. The culmination of research findings from these studies strengthens the argument that the Indian markets, though in a developing phase, are not entirely efficient and are susceptible to anomalies based on temporal factors.

C. Individual Stocks vs. Market Benchmark Indices:

While individual investors commonly trade individual stocks, empirical studies on market anomalies often focus on broader market benchmark indices. This discrepancy raises an important consideration regarding the applicability of findings to individual stock investments. Despite the prevalence of studies exploring market anomalies in various global contexts, a notable dearth of research focuses specifically on individual stocks within the Indian market.

One pioneering study by Li and Liu delved into anomalies for individual stocks in companies listed in Australia. However, such endeavours remain conspicuously absent in the Indian market context. This research gap signifies a significant opportunity for future investigations to explore and comprehend the idiosyncrasies and anomalies that may be unique to individual stocks in the Indian market. As India is a developing nation and Indian investors care about saving money more than spending it, they shall know what patterns their investments follow in the economy.

Whether the investment they make is efficient in nature or not, if not what can the size of the inefficiency be.

The introduction of this paper is followed by intricate literature review, which gives us a peek inside the past empirical studies on the topic of calendar anomalies, followed by the data which the study uses and the method of the study. The results and discussions of the paper is follows the data and methodology and the results derived are from the data as explained in the previous section using the methods of the research. The final section of the paper conclusion of the whole research undertaken, including all the findings of the results and discussion.

II. LITERATURE REVIEW

The complex nature of market efficiency has rendered the examination of the Efficient Market Hypothesis (EMH) regarding calendar anomalies a widely pursued research avenue. Researchers are keen to assess whether the EMH remains valid even when confronted with predictable patterns dictated by the calendar, such as Mondays exhibiting lower market performance or January showing heightened returns. Numerous studies have been carried out to scrutinize anomalies in the stock market, particularly investigating calendar seasonality within the Indian market.

Sharma and Deo (2014) analyzed the January effect and a potential April phenomenon. Utilizing statistical methods such as t-tests and autocorrelation tests, their findings unveiled March as the underperformer, consistently yielding significantly lower returns compared to its counterparts. An in-depth exploration of calendar anomalies on the Bombay Stock Exchange conducted by S Archana (2014) revealed a notable trend: Mondays consistently exhibited lower performance over the studied duration. This observation resulted from an exhaustive examination that included computations of average returns, comparisons of fluctuations, and statistical verifications employing simple means and t-tests.

In the examination of Latin American markets, Rossi (2007) utilized a linear regression model incorporating dummy variables, uncovering a Monday effect in the Brazilian market and a Friday effect in the Argentine market. Initially, Chile demonstrated a comparable Friday effect. Additionally, Argentina displayed a January effect, while Mexico manifested a November effect. Simultaneously, in a comparison between two markets—one developed and one underdeveloped— Garg (2010) utilized statistical methodologies, including descriptive tests, t-tests, and post-hoc analyses, to scrutinize their calendar trends. Interestingly, while US indices showed no inclination towards day-of-the-week or monthly cycles, both markets surprisingly exhibited similar patterns within certain months and at month-end periods.

Swami (2012) conducted an examination of calendar anomalies in South Asian markets employing a linear regression model and dummy variables. The study meticulously scrutinized weekday and month effects,

revealing distinctive patterns around month-ends through t-tests. Notably, in India and Sri Lanka, Tuesdays and Fridays emerged as influential factors, while Bangladesh exhibited a Monday effect. Employing a multivariate regression model, Dutta and Das (2021) systematically analyzed the behavior of Nifty 50 spanning from 2001 to 2015. Their scrutiny uncovered weekday patterns pulsating within the Indian market, with Mondays and Fridays emerging as days of potential influence. Additionally, March and October hinted at distinctive shifts in performance.

Kinateder (2019), utilizing an advanced GARCH model to investigate BRICS markets, unveiled month-of-the-year patterns in the other BRICS member countries, with the Indian markets showing no discernible response. Nevertheless, Tuesdays surfaced as potential influencers within the Indian context. Kumar and Jawa (2017), in their examination of Nifty 50 returns employing an EGARCH model, uncovered a captivating calendar blend. Wednesdays exerted a notable influence on market movements, while December hinted at potential shifts in the performance landscape. And in the examination undertaken by Samuel O. Onyuma (2009) of the Kenyan stock exchange, patterns linked to days of the week and months of the year were scrutinized. The analysis highlighted that returns in January exceeded those of other months, and a comparable trend was observed on Fridays.

A. *Day-of-the-Week Effect*

Different markets, such as equities, foreign exchange, and T-bill markets, have been explored for day-of-the-week patterns. Researchers like Fama (1970), Cross (1973), French (1980), Abraham & Ikenberry (1994), and Cabello & Ortíz (2003) have shown variations in the distributions of stock returns across different days of the week. Specifically, they found that the average return on Mondays is significantly lower than the average return on other days. Despite this, the Efficient Market Hypothesis (EMH) posits that the expected daily returns on stocks should be the same for all days of the week. In other words, according to EMH, the expected return of a given stock should be consistent throughout the week. However, French (1980) investigated the average daily return of stocks listed on the New York Stock Exchange (NYSE) and discovered that Mondays exhibited negative average returns, while the remaining days of the week showed positive average returns.

Chang, Pinegar & Ravichandran (1993) state that adjustments to the sample size or the error term render the Day-of-the-Week (DOW) effect statistically insignificant in the United States. Adrangi & Ghazanfari (1997) explore the weekend effect in the corporate bond market, discovering a reverse weekend effect where Monday returns are consistently positive and statistically significant on average. Meanwhile, Dubois & Louvet (1996) analyze the DOW effect across nine countries, finding negative returns on Mondays and positive returns on Wednesdays. Schwert (2003) provides evidence of the weekend effect in the United States spanning the years 1802 to 1987. Chan, Leung & Wang (2004) attribute the lower returns on Mondays to individual investors, noting a strong Monday effect in stocks with lower

institutional investment. In an effort to expand on these findings, Siegel (1998) examines the Monday effect for the Dow Jones Industrial Average (DJIA) from 1885 to 1997. He concludes that if Monday returns had been equivalent to non-Monday returns throughout the sample period, the DJIA would have been twice its level at the end of 1997. Additionally, Marquering, Nisser, and Valla (2006) document a decline in the Monday effect on the DJIA from 1960 to 2003.

Empirical research indicates that the day-of-the-week effect is not exclusive to the United States, the world's largest capital market, and other developed markets like the UK, France, Canada, Australia, and Japan. It is also observed in emerging markets such as Thailand, Malaysia, Hong Kong, and Turkey. Across various Western economies, including the USA, UK, and Canada, analyses have consistently revealed statistically significant negative returns on Mondays, while Fridays exhibit statistically significant positive returns. In contrast, in markets like Japan, Australia, Singapore, Turkey, and France, the most pronounced negative returns tend to occur on Tuesdays (Watanapalachaikul & Islam, 2006; Gardeazabal & Regúlez-Castillo, 2002).

Rahman (2009), in his examination of the Dhaka Stock Exchange, found that weekdays did not exhibit uniform characteristics. Through linear regression and GARCH models, it was discovered that Mondays and Sundays consistently showed decreasing returns, while Thursdays stood out as having consistently positive trends. Additionally, Masum Iqbal and Roy (2015) conducted a study on the same market spanning from 2004 to 2015. They employed summary statistics to assess the day-of-the-week effect and reported a reverse weekend effect, with Thursday and Tuesday displaying the lowest returns. Furthermore, high volatility was observed on Tuesdays.

Liu and Li (2010) examined Australian firms by employing summary statistics and t-tests. Their findings revealed a presence of positive returns on Mondays and negative returns on Fridays. In contrast to the predominant focus on index and individual company stock returns in research, Berument and Kiyamaz (2001) directed their attention towards investigating the influence of the day-of-the-week effect on the volatility of the S&P 500. They conducted an empirical analysis utilizing OLS and GARCH models. The outcomes of their analysis substantiated the presence of a day-of-the-week effect, providing new insights into the dynamic nature of the index.

Ercan (1994) scrutinized the Istanbul Stock Exchange Composite Index (ISECI) using a Regression model and refuted the idea that a day-of-the-week effect significantly influenced its performance. Despite Thursdays, Fridays, and Mondays being commonly associated with market fluctuations, their returns showed no statistically significant differences.

S. Sharma (2011) conducted an in-depth analysis of Indian Stock Indices spanning from 2008 to 2009, employing t-tests to investigate the presence of Monday and Friday

effects, commonly associated with calendar anomalies. The results indicated an absence of these effects, suggesting an efficient market during the period examined. Debasish (2012) examined several Indian IT companies listed on the NSE within the period from 1994 to 2010. Using H-tests to identify market inefficiencies, the study unveiled distinct Wednesday and Thursday effects in the stock performance of Infosys. Sarma (2004) delved into the weekly performance of the Indian market and made a noteworthy discovery: Mondays stood out as particularly lucrative, yielding significantly higher returns compared to other weekdays. This revelation, uncovered through the Kruskal-Wallis test, challenges conventional beliefs and implies the existence of potential calendar-based opportunities for investors. Malavalli & Sathyanarayana (2015) examined the BSE Sensex spanning from 2004 to 2014, employing statistical methods such as descriptive statistics, t-tests, and regression models. The study concluded that, over the long term, the index displayed no notable day-of-the-week effect, indicating a degree of efficiency within the Indian markets.

B. Month-of-the-Year Effect:

The phenomenon known as the month of the year effect, commonly referred to as the January effect, shares similarities with the weekend effect. However, in this case, stock prices tend to be higher in the early days of January. Research by Henke (2001), Nassir & Mohammad (1987), and Roll (1983) has indicated that average monthly returns in January surpass those in any other month. Similarly, Ho (1990) analyzed daily returns between 1975 and 1987 and found that six Asia Pacific stock markets (Hong Kong, Korea, Malaysia, Philippines, Singapore, and Taiwan) experienced significantly higher returns during the months of January and February. Chen & Singal (2001) as well as (Cabello & Ortíz, 2003) also observed positive returns in the Mexican stock market during January. One explanation for this trend is the common practice among investors of selling stocks at the year-end to generate capital losses, which can be used to offset capital gains and reduce tax liability. This behavior, known as the tax loss selling effect, may contribute to higher average returns in January, particularly if the tax year concludes in December (Henke, 2001).

Mouselli & Al-Samman (2016) explored the Damascus Securities Exchange by employing the Ordinary Least Squares (OLS) method. Their investigation unveiled an unexpected occurrence returns in May consistently surpassed those of other months throughout the analyzed period. Giovanis (2009) employed a GARCH model to assess 55 markets and identified increased returns in December for a significant portion of the examined markets. The emphasis was placed on the fact that only a limited number of the 55 indices displayed a January effect. Marrett & Worthington (2011) examined anomalies related to the month of the year in the Australian market by utilizing a GARCH model. The research established that a January effect, along with effects in April and December, were evident in small-cap companies.

Dollery, Ho, and Wong (2014) conducted research on the Malaysian market, specifically the KLSE, covering the years 1994 to 2006. Their analysis sought to evaluate the

consistency of the day-of-the-week anomaly. The results suggested that, preceding the crisis, February exhibited significantly heightened returns, while the January effect became apparent after the crisis. Zakaria & Abdalla (2015) scrutinized the performance of the Khartoum Stock Exchange (KSE) in Sudan. Their analysis exposed variations in returns between the initial and final months of the year, signifying a distinct anomaly. The conclusion drawn was that the Sudanese market exhibited a certain degree of inefficiency associated with this anomaly. Li & Liu (2010) examined New Zealand stocks using t-tests and identified the lack of a conventional January effect. Additionally, their study did not identify any other month as being significant.

Raghuram (2017) analyzed various indices listed on the BSE from 1990 to 2015 using a dummy regression model. The findings indicated that the small-cap index displayed more pronounced month-of-the-year effects. Furthermore, a November effect in the Bombay Stock Exchange was identified, a discovery supported by Parikh (2009), who utilized a GARCH model from 1999 to 2008, and Siddiqui & Narula (2013), who investigated the Bombay Stock Exchange over a 12-year period starting from 2000. The latter study, which employed a GARCH model to explore the Month-of-the-year effect, also underscored that Indian markets deviate from tax loss selling hypotheses, particularly lacking a March effect.

Harshita, Singh, and Yadav (2019) conducted a two-decade study on the Indian Stock Markets using a TGARCH model. The investigation revealed signs of November and December effects in the index returns, with the December effects specifically notable in smaller-sized firms. Parikh (2010) delved into seasonal anomalies within the Indian market, concentrating on the NSE (National Stock Exchange). The study entailed an examination of the returns of the S&P CNX NIFTY index spanning a decade, exposing the existence of a December phenomenon.

III. DATA AND METHODOLOGY

A. Data and Data Sources:

The dataset utilized in this research encompasses the stock prices of companies listed in the Nifty 50 Index of the National Stock Exchange of India as of November 30, 2023, serving as a baseline for assessing portfolio performance. Additionally, the Nifty 50 Index's value is included as a benchmark for comparative analysis, spanning the time frame from April 1, 2013, to March 31, 2023. The collected data will consist of both daily stock prices and monthly price records for the stocks under examination.

The data collection will encompass key stock indicators such as Opening, High, Low, and Closing prices, along with the volume of shares traded during specific intervals. Additionally, the Adjusted Closing price will be included, which accommodates factors like Stock Splits and bonuses throughout the chosen timeframe. To ensure accuracy, any periods coinciding with exchange closures due to economic and calendar holidays in the Indian and US economies will be excluded from the analysis, thus refining the dataset.

Table 1: Constituents of Nifty 50 Index

Sr. No.	Symbol	Yahoo Finance Ticker	Company Name	Weightage	Date of Listing
1	ADANIENT	ADANIENT.NS	Adani Enterprises Limited	0.84%	04-06-1997
2	ADANIPTS	ADANIPTS.NS	Adani Ports and Special Economic Zone Limited	1.09%	27-11-2007
3	APOLLOHOSP	APOLLOHOSP.NS	Apollo Hospitals Enterprise Limited	0.67%	10-01-1996
4	ASIANPAINT	ASIANPAINT.NS	Asian Paints Limited	1.35%	31-05-1995
5	AXISBANK	AXISBANK.NS	Axis Bank Limited	3.65%	16-11-1998
6	BAJAJ-AUTO	BAJAJ-AUTO.NS	Bajaj Auto Limited	0.87%	26-05-2008
7	BAJAJFINSV	BAJAJFINSV.NS	Bajaj Finserv Limited	0.96%	26-05-2008
8	BAJFINANCE	BAJFINANCE.NS	Bajaj Finance Limited	2.03%	01-04-2003
9	BHARTIARTL	BHARTIARTL.NS	Bharti Airtel Limited	2.75%	15-02-2002
10	BPCL	BPCL.NS	Bharat Petroleum Corporation Limited	0.51%	13-09-1995
11	BRITANNIA	BRITANNIA.NS	Britannia Industries Limited	0.66%	05-11-1998
12	CIPLA	CIPLA.NS	Cipla Limited	0.74%	08-02-1995
13	COALINDIA	COALINDIA.NS	Coal India Limited	0.98%	04-11-2010
14	DIVISLAB	DIVISLAB.NS	Divi's Laboratories Limited	0.50%	12-03-2003
15	DRREDDY	DRREDDY.NS	Dr. Reddy's Laboratories Limited	0.72%	30-05-2003
16	EICHERMOT	EICHERMOT.NS	Eicher Motors Limited	0.53%	07-09-2004
17	GRASIM	GRASIM.NS	Grasim Industries Limited	0.75%	10-05-1995
18	HCLTECH	HCLTECH.NS	HCL Technologies Limited	1.75%	06-01-2000
19	HDFCBANK	HDFCBANK.NS	HDFC Bank Limited	11.91%	08-11-1995
20	HDFCLIFE	HDFCLIFE.NS	HDFC Life Insurance Company Limited	0.62%	17-11-2017
21	HEROMOTOCO	HEROMOTOCO.NS	Hero MotoCorp Limited	0.62%	11-04-2003
22	HINDALCO	HINDALCO.NS	Hindalco Industries Limited	0.87%	08-01-1997
23	HINDUNILVR	HINDUNILVR.NS	Hindustan Unilever Limited	2.37%	06-07-1995
24	ICICIBANK	ICICIBANK.NS	ICICI Bank Limited	7.47%	17-09-1997
25	INDUSINDBK	INDUSINDBK.NS	IndusInd Bank Limited	0.98%	28-01-1998
26	INFY	INFY.NS	Infosys Limited	6.19%	08-02-1995
27	ITC	ITC.NS	ITC Limited	4.46%	23-08-1995
28	JSWSTEEL	JSWSTEEL.NS	JSW Steel Limited	0.75%	23-03-2005
29	KOTAKBANK	KOTAKBANK.NS	Kotak Mahindra Bank Limited	2.74%	20-12-1995
30	LT	LT.NS	Larsen & Toubro Limited	4.52%	23-06-2004
31	LTIM	LTIM.NS	LTIMindtree Limited	0.57%	21-07-2016*
32	M&M	M&M.NS	Mahindra & Mahindra Limited	1.60%	03-01-1996
33	MARUTI	MARUTI.NS	Maruti Suzuki India Limited	1.42%	09-07-2003
34	NESTLEIND	NESTLEIND.NS	Nestlé India Limited	0.96%	12-08-2002
35	NTPC	NTPC.NS	NTPC Limited	1.58%	05-11-2004
36	ONGC	ONGC.NS	Oil and Natural Gas Corporation Limited	1.01%	19-07-1995
37	POWERGRID	POWERGRID.NS	Power Grid Corporation of India Limited	1.16%	05-10-2007
38	RELIANCE	RELIANCE.NS	Reliance Industries Limited	9.98%	29-11-1995
39	SBILIFE	SBILIFE.NS	SBI Life Insurance Company Limited	2.54%	03-10-2017*
40	SBIN	SBIN.NS	State Bank of India	0.65%	01-03-1995
41	SUNPHARMA	SUNPHARMA.NS	Sun Pharmaceutical Industries Limited	1.56%	08-02-1995
42	TATACONSUM	TATACONSUM.NS	Tata Consumer Products Limited	0.75%	18-11-1998
43	TATAMOTORS	TATAMOTORS.NS	Tata Motors Limited	1.52%	22-07-1998
44	TATASTEEL	TATASTEEL.NS	Tata Steel Limited	1.15%	18-11-1998
45	TCS	TCS.NS	Tata Consultancy Services Limited	4.05%	25-08-2004
46	TECHM	TECHM.NS	Tech Mahindra Limited	0.93%	28-08-2006
47	TITAN	TITAN.NS	Titan Company Limited	1.50%	24-09-2004
48	ULTRACEMCO	ULTRACEMCO.NS	UltraTech Cement Limited	1.20%	24-08-2004
49	UPL	UPL.NS	UPL Limited	0.30%	23-01-2004
50	WIPRO	WIPRO.NS	Wipro Limited	0.72%	08-11-1995

The data collected for fifty companies can be grouped according to the sector they operate in. The following is the sectoral division of the companies given above.

Table 2: Industry Wise Number of Companies in NIFTY 50 Index

Sr. No	Industry Name	Number of Companies
1	Industrials	4
2	Healthcare	5
3	Financials	10
4	Materials	8
5	Consumer Discretionary	6
6	Consumer Staples	5
7	Communication Services	1
8	Energy	3
9	Information Technology	6
10	Utilities	2

In case any company lists after the April 1 2013, that date will be considered as the start point for that company in the analysis.

B. Methodology:

As the tests are being conducted for the returns of the specific companies, the following function will be used to calculate returns:

➤ *Equation 1: Logarithmic Returns*

$$R_t = \log\left(\frac{\text{Adjusted Close}_t}{\text{Adjusted Close}_{t-1}}\right) * 100$$

The R_t shows the logarithmic returns for a specific company for any given time period. The adjusted close will be used as the returns of the companies will be estimated only after taking into accounts any changes that have happened to the stock prices due to bonuses, stock splits, dividends etc.

The return model is similar to the model used by Samuel O. Onyuma (2009) while studying the Day-of-the-Week and Month-of-the-Year effects.

As the data collected is secondary data the statistical properties of the data have to be checked to ensure whether the data collected follows a normal distribution or not. For the same, a Skewness, Kurtosis and Jarque-Bera will be conducted. The null hypothesis for the Jarque-Bera test is that the data collected is normally distributed and the alternative being the data is not normally distributed. The alternate hypothesis will be accepted when the p-value of the test is

➤ *Equation 3: Model Representations for Day-of-the-Week Effect*

$$R_t = \beta_1 D_{Monday} + \beta_2 D_{Tuesday} + \beta_3 D_{Wednesday} + \beta_4 D_{Thursday} + \beta_5 D_{Friday} + e_t$$

Dummy variables will be allocated to each day according to the returns' date, and the error term " e_t " will account for any deviations or variations from the returns estimated by the models.

greater than 0.05 or 5%, concluding that the data is not normally distributed.

Similar to Samuel O. Onyuma (2009) this study also employees a dummy variable regression model. The following model will be used to test the presence of any anomalies in the stock market returns of the companies:

➤ *Equation 2: Dummy Variable Regression Model*

$$R_t = \sum_{i=1}^{12} \beta_i D_i + e_t$$

The regression function mentioned above intentionally excludes the constant (intercept). Instead, the returns will be regressed against dummy variables representing each day and month. For the day-of-the-week effect, the variable "i" will range from 1 to 5, reflecting the five trading days in a week. In the case of the month-of-the-year effect, the variable "i" will range from 1 to 12, representing all twelve months. This approach is adopted to avoid the distortion of the regression function by a constant, considering that stock markets operate only five days a week and consistently throughout all twelve months of the year.

• *Day-of-the-Week Effect:*

The hypothesis being examined in the day-of-the-week effect asserts that there are no statistically significant differences in returns across various days. The subsequent model representations outline the methodologies used to test this day-of-the-week effect:

• *Month-of-the-Year Effect:*

The hypothesis under examination regarding the month-of-the-year effect asserts that there is no statistically significant difference in returns across all months. The subsequent representations outline the models employed to test this month-of-the-year effect:

➤ *Equation 4: Model Representations for Month of the Year Effect*

$$R_t = \beta_1 D_{January} + \beta_2 D_{February} + \beta_3 D_{March} + \beta_4 D_{April} + \beta_5 D_{May} + \beta_6 D_{June} + \beta_7 D_{July} + \beta_8 D_{August} + \beta_9 D_{September} + \beta_{10} D_{October} + \beta_{11} D_{November} + \beta_{12} D_{December} + e_t$$

Dummy variables will be assigned to each month based on the returns' month, and the error term "e_t" will accommodate any deviations or discrepancies from the returns predicted by the models.

IV. ANALYSIS AND INTERPRETATION

A. *Day-of-the-Week Effect:*

➤ *Industrials Sector (Heavy Goods Companies)*

Within the Industrial Sector, comprising four companies within the index, a notable departure from normal distribution is observed in the returns of all companies, signaling the presence of heteroscedasticity. This inference is drawn from the results of the Jarque-Bera test, a statistical measure assessing the normality of the data. Adding to this observation, the skewness values for each company deviate from the null value, with all values either smaller or larger than zero. Typically, stock market returns exhibit negative skewness, implying a left-tailed distribution and returns consistently surpassing the average. Interestingly, Eicher Motors distinguishes itself by displaying a right tail, as indicated in Table 3.

Moreover, a discernible Tuesday effect characterizes the industry. Three out of the four companies exhibit significantly different returns on Tuesdays, while one company designates Wednesday as a significant day for its market performance. This pattern opens avenues for strategic planning by investors and traders. Considering the tendency for lower or negative returns on Mondays, a strategic approach involves planning long positions by initiating purchases early in the week, followed by a planned exit on Tuesdays when returns demonstrate a significant increase compared to other days, as outlined in Table 4. By aligning trading strategies with these observed patterns, investors can optimize their market positions within the Industrial Sector.

➤ *Health Care Sector*

Within the health care sector, a distinctive pattern emerges as all companies manifest a heteroscedastic distribution, with three displaying a left tail, indicative of negative skewness. This implies that the returns for these companies consistently surpass the average daily returns. Notably, Apollo Hospitals and Cipla Limited deviate from this trend, exhibiting a right tail with positive skewness, as highlighted in Table 5.

The sector, encompassing pharmaceutical companies and hospitals, reveals a common day of significance—Friday. On this day, returns across the sector have consistently proven significantly higher compared to other days, as detailed in Table 6.

Drawing parallels with the industrial sector, investors can strategically plan their market positions within the health care sector. Initiating long positions on Mondays, characterized by negative returns, aligns with observed patterns. Subsequently, planning exits on Fridays, when returns exhibit a significant uptick, offers an advantageous approach. This strategy is particularly relevant given the sector's observed tendency for heightened returns on Fridays. By aligning investment decisions with these temporal trends, investors can capitalize on the distinctive characteristics of the health care sector, optimizing their positions for potential gains.

➤ *Financials Sector*

In the financial sector, mirroring the trends observed in previous sectors, companies exhibit a heteroscedastic distribution of returns. The majority of these companies showcase a left tail, indicative of negative skewness in their returns. However, the standout exception is the State Bank of India, which diverges with a positive skewness value, signifying a right tail. Notably, the returns for State Bank of India consistently fall below the mean returns, as detailed in Table 7.

Analyzing the outcomes presented in Table 8, a noteworthy pattern emerges with the significance of Tuesdays across most companies. On this day, returns consistently demonstrate statistical significance, surpassing those of other days. Despite variations in statistically different days, Tuesday consistently stands out. For investors, a strategic approach involves planning entry into long positions on Mondays, leveraging the observed statistically lower returns on this day. Subsequently, planning exits on Fridays aligns with the trend of statistically higher returns on that particular day.

This strategy allows investors to capitalize on the distinctive patterns within the financial sector. By strategically aligning entry and exit points with the observed temporal trends, investors can optimize their positions and potentially enhance returns in a sector characterized by heteroscedasticity and unique patterns across different trading days.

➤ *Materials Sector*

Within the materials sector, a distinct absence of homoscedasticity in returns becomes evident, supported by the Jarque-Bera test results with p-values below 0.05. This rejection of the null hypothesis underscores the deviation from data normality. Predominantly, returns in this sector display negative skewness, aligning with the typical behavior of stock returns where increasing returns contribute to shareholder wealth. However, Coal India Limited and UPL Limited diverge from this trend, exhibiting positive skewness values, indicative of a right tail and returns consistently lower than their mean returns, as outlined in Table 9.

While no specific seasonality in daily returns across different days is observed, certain companies show significance on either Thursdays or Tuesdays. Investors are advised to shape their investment strategies by considering the fundamentals of the respective companies. Interestingly, the absence of abnormal profit generation through market anomalies is apparent in the materials sector companies, as indicated in Table 10.

The materials sector's unique characteristics prompt investors to focus on fundamental analysis, steering clear of reliance on market anomalies for abnormal profits. By understanding the distinct skewness patterns and lack of pronounced seasonality, investors can tailor their strategies to the specific dynamics of the materials sector, ensuring a more informed and potentially profitable approach to investment decision-making.

➤ *Consumer Discretionary Sector*

Within the Consumer Discretionary sector, housing six companies as part of the Nifty 50, an in-depth analysis of four companies uncovers a heteroscedastic pattern in returns accompanied by a skewed distribution featuring a distinctive right tail. The skewness values, typically negative in stock market returns, deviate below zero, signaling a unique right-tailed pattern. This indicates that returns have consistently fallen below the mean returns, as illustrated in Table 11.

Delving into the sector's seasonality, the prominence of Tuesdays becomes apparent, with statistical significance observed in two companies. This insight underscores the vital role that Tuesdays play in shaping the stock market performance of these companies.

Armed with this understanding, investors and traders can strategically formulate plans to generate abnormal profits. Initiating long positions on Mondays or short positions on Tuesdays could be a strategic entry point. Capitalizing on positive returns on Fridays, where a favorable trend is observed, involves squaring off long positions. Simultaneously, covering short positions on Mondays, marked by lower returns, completes the cycle. This strategic approach enables investors to profit from the spread between sell and square-off prices, as detailed in Table 12.

By aligning their investment strategies with observed patterns, market participants can navigate the unique dynamics of the Consumer Discretionary sector. The identified right-tailed distribution and the significance of specific weekdays offer valuable insights, empowering investors to make informed decisions and potentially capitalize on market inefficiencies within this sector.

➤ *Consumer Staples*

Within the consumer staples sector, encompassing five companies, a discernible heteroscedastic distribution in daily returns is evident, as affirmed by the results of the Jarque-Bera test. Notably, the returns exhibit positive skewness, unveiling a right-tailed pattern that signifies returns from these companies typically fall below the average returns over the study period, as outlined in Table 13.

Examining the temporal dynamics of this sector reveals compelling seasonality trends. Specifically, Wednesdays and Thursdays stand out, with two companies each exhibiting statistically higher returns compared to other days. This suggests that these particular weekdays hold significance for potential investors in planning their market strategies.

In light of these observations, investors can strategically plan their entry and exit points. Mondays, characterized by typically negative returns, present a strategic entry opportunity. Contrarily, Wednesdays and Thursdays, marked by statistically higher returns, provide potential exit points. Crafting an exit strategy on these days aligns with the observed seasonality, enabling investors to capitalize on favorable market conditions.

By leveraging the identified right-tailed skewness and recognizing the significance of specific weekdays, investors in the consumer staples sector can tailor their strategies to optimize returns. This nuanced understanding of the sector's dynamics empowers investors to make well-informed decisions, aligning their actions with observed patterns for potential profitability in a sector characterized by heteroscedasticity and distinctive temporal trends.

➤ *Communications Services Sector*

Within the Communications Services sector, comprised of a solitary company within the index constituents, an evident heteroscedastic nature characterizes the market returns for the company. This characteristic is affirmed by the results of the Jarque-Bera test. Additionally, the returns display positive skewness, signifying a right-tailed distribution, indicative of returns generally falling below the average returns, as depicted in Table 15.

Notably, no discernible trend emerges in the returns of the singular company within the sector, and no abnormality is apparent. This lack of statistical anomalies implies that traders cannot formulate strategies to generate abnormal profits. The absence of statistical differences in returns over different days, as indicated in Table 16, further underscores the challenge in identifying distinct patterns or trends within the market behavior of this particular company.

Given the limited data points and the absence of pronounced trends, traders in the Communications Services sector may find it challenging to devise strategies based on historical returns. The heteroscedastic nature and positive skewness in returns suggest a degree of unpredictability. Consequently, market participants may need to rely on real-time information and adapt their strategies dynamically to the ever-evolving market conditions of this singular company within the sector. This adaptability becomes crucial in navigating the unique characteristics of the market returns, which, as indicated, lack discernible trends or abnormal patterns over specific days.

➤ *Energy Sector*

In the Energy sector, encompassing three companies, including the notable Reliance Industries Limited, the returns portray a heteroscedastic nature. Notably, the returns in most companies exhibit a left tail, suggesting that these companies generally yield returns surpassing the average. It's noteworthy that no consistent patterns of market inefficiencies are observed across different companies, signifying a lack of uniform trends in terms of significant returns, as detailed in Table 17 and Table 18.

For strategic trading considerations, investors can contemplate entering long positions on Mondays, a day typically associated with negative returns. Planning exits on Fridays becomes a strategic move, given the observed tendency for positive returns on this day. This trading strategy strategically leverages the weekend effect, where Fridays consistently demonstrate higher and positive returns compared to Mondays, as indicated in Table 18.

This approach aligns with the broader market dynamics and specific patterns observed in the Energy sector. By strategically timing their entries and exits based on observed trends, investors can potentially optimize their returns within this sector. The recognition of heteroscedasticity and the left-tailed distribution in returns contribute valuable insights for investors to navigate the nuances of the Energy sector, tailoring their strategies to the distinct characteristics of individual companies within the sector.

➤ *Information Technology Sector*

Within the Information Technology sector, a discernible heteroscedastic nature characterizes the returns, indicating variability in their distribution. Predominantly, the returns exhibit a negative skewness, implying a left-tailed distribution. Interestingly, two out of the six companies in this sector deviate from the norm, displaying positive skewness, suggesting that their returns tend to fall below the average returns, as outlined in Table 19.

The Information Technology sector as a whole demonstrates a high degree of efficiency, showcasing a lack of specific trends across different companies. Most prominent entities within the sector exhibit efficient returns, while LTI Mindtree, a relatively newer addition to the market, stands out

with a notable degree of inefficiency. Despite this, opportunities for generating abnormal profits by capitalizing on inefficiencies are limited, as the majority of companies in this sector exhibit efficient market returns, as detailed in Table 20.

The efficient market returns across the Information Technology sector underscore the challenges associated with exploiting market inefficiencies for abnormal profits. The sector's overall efficiency suggests that market prices quickly reflect available information, leaving little room for traders to capitalize on discrepancies. Investors in this sector may find it more prudent to focus on long-term strategies and fundamental analysis, given the limited scope for exploiting inefficiencies for short-term gains.

➤ *Utilities Sector*

In the Utilities sector, notable companies such as NTPC Limited and Power Grid Corporation of India Limited exhibit returns with a heteroscedastic and non-normal distribution. The returns manifest a negative skewness, indicative of a left-tailed distribution, and consistently surpass the mean values, as evidenced in Table 21.

Despite the heteroscedastic and non-normal nature of returns, market efficiency is observed within the companies of this sector. Notably, investors can strategically plan their entry and exit points based on observed trends. Entering long positions on Wednesdays, a day where returns are comparatively lower than those from other days, offers a strategic entry opportunity. On the other hand, planning exits on Tuesdays becomes a viable strategy, capitalizing on the observed trend of comparatively higher returns on this particular day across all companies within the sector, as detailed in Table 22.

These observed patterns within the Utilities sector present valuable insights for investors to optimize their market strategies. By aligning their entry and exit decisions with the identified trends, investors can potentially enhance their returns. The left-tailed distribution, negative skewness, and the efficient market returns highlight distinctive characteristics within the Utilities sector that savvy investors can leverage for informed decision-making and strategic positioning.

Table 3: Descriptive Statistics for Industrials Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Adani Enterprises Limited	-0.4901940	0.2419100	0.0016820	0.0018600	-1.5293840	26.3042900	72127.00	0.00
Adani Ports and Special Economic Zone Limited	-0.2129330	0.1184040	0.0006552	0.0001383	-0.6362130	7.9618510	6689.10	0.00
Eicher Motors Limited	-0.1344610	0.1255756	0.0009933	0.0002153	0.1804497	3.1312950	1023.20	0.00
Larsen & Toubro Limited	-0.1775222	0.1321998	0.0005452	-0.0002003	-0.0535261	7.5675620	5894.00	0.00

Table 4: Regression Results for Industrials for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Adani Enterprises Limited	0.0016333	1.034	0.0051758*	3.293	-0.0005053	-0.322	0.0013440	0.853	0.0007116	0.447
Adani Ports and Special Economic Zone Limited	-0.0008105	-0.726	0.0024251*	2.185	-0.0001925	-0.174	0.0004299	0.386	0.0014271	1.269
Eicher Motors Limited	-0.0014798	-1.573	0.002653*	2.834	0.0023236*	2.487	0.0005524	0.589	0.0008653	0.912
Larsen & Toubro Limited	-0.0004234	-0.525	0.0010680	1.331	0.0000867	0.108	0.0014600	1.816	0.0005039	0.620

Table 5: Descriptive Statistics for Health Care Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Apollo Hospitals Enterprise Limited	-0.1620000	0.1440000	0.0006710	-0.0000585	0.2431611	5.4532720	3085.10	0.00
Cipla Limited	-0.0923970	0.1225499	0.0003261	-0.0004710	0.4308070	4.2993520	1979.30	0.00
Divi's Laboratories Limited	-0.2518620	0.1497873	0.0007286	0.0009274	-1.3162920	21.4863000	48197.00	0.00
Dr. Reddy's Laboratories Limited	-0.1573660	0.1298701	0.0003944	0.0002497	-0.1960190	7.6142710	5981.60	0.00
Sun Pharmaceutical Industries Limited	-0.1632016	0.1044689	0.0003690	0.0002927	-0.3688168	5.6265710	3314.30	0.00

Table 6: Regression Results for Health Care Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Apollo Hospitals Enterprise Limited	-0.0001385	-0.144	0.0008682	0.905	0.0002799	0.292	0.0012026	1.250	0.0011245	1.156
Cipla Limited	-0.0005909	-0.785	0.0002891	0.386	0.0002831	0.379	-0.0001102	-0.147	0.0017798*	2.346
Divi's Laboratories Limited	-0.0000140	-0.015	0.0005260	0.581	0.0005070	0.562	0.0008100	0.893	0.001831*	1.996
Dr. Reddy's Laboratories Limited	-0.0008858	-1.132	0.0008111	1.041	0.0003771	0.485	0.0007982	1.023	0.0008750	1.109
Sun Pharmaceutical Industries Limited	-0.0014057	-1.610	0.0004107	0.473	0.0007620	0.879	0.0007433	0.854	0.0013200	1.499

Table 7: Descriptive Statistics for Financials Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Axis Bank Limited	-0.3272660	0.1779847	0.0004361	0.0002399	-1.0390120	22.1548500	50929.00	0.00
Bajaj Finserv Limited	-0.2992440	0.1084361	0.0011193	0.0003991	-0.9380970	16.8049100	29411.00	0.00
Bajaj Finance Limited	-0.2643670	0.1044067	0.0015652	0.0009168	-0.5360110	9.1002550	8638.80	0.00
HDFC Bank Limited	-0.1347540	0.1097471	0.0006687	0.0003582	-0.1199720	9.1106170	8546.00	0.00
HDFC Life Insurance Company Limited	-0.2000330	0.1337870	0.0002850	-0.0002050	-0.4762051	11.7788300	7744.70	0.00
ICICI Bank Limited	-0.1965970	0.1370430	0.0006220	0.0000000	-0.0174861	6.9953540	5035.80	0.00
IndusInd Bank Limited	-0.2708585	0.3693063	0.0003476	0.0000711	0.0925345	30.6873600	96859.00	0.00
Kotak Mahindra Bank Limited	-0.1392571	0.1137835	0.0006463	0.0005605	-0.0673589	5.9094640	3596.00	0.00
SBI Life Insurance Company Limited	-0.1611733	0.1230754	0.0003339	0.0004319	-0.7136809	9.7120950	5473.40	0.00
State Bank of India	-0.1445865	0.2444130	0.0003966	0.0002126	0.5896514	9.7319550	9887.30	0.00

Table 8: Regression Results for Financials Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Axis Bank Limited	-0.0005430	-0.531	0.0014299	1.404	0.0004354	0.429	0.0005046	0.495	0.0003297	0.320
Bajaj Finserv Limited	-0.0018851	-1.930	0.0034753*	3.576	0.001995*	2.057	0.0005791	0.595	0.1379800	1.401
Bajaj Finance Limited	0.0016950	-1.566	0.003778*	3.510	0.0015670	1.459	0.002452*	2.273	0.0017090	1.567
HDFC Bank Limited	-0.0006472	-0.961	0.0007309	1.091	0.0005199	0.777	0.0010003	1.490	0.0017285*	2.545
HDFC Life Insurance Company Limited	-0.0041387*	-3.362	0.003504*	2.835	0.0009775	0.791	0.0014576	1.182	-0.0004633	-0.372
ICICI Bank Limited	-0.0002814	-0.296	0.0023476*	2.486	0.0008247	0.875	0.0003756	0.397	-0.0001937	-0.202
IndusInd Bank Limited	-0.0016177	-1.380	0.0006619	0.568	0.0010986	0.944	0.0009575	0.819	0.0006136	0.519
Kotak Mahindra Bank Limited	-0.0009606	-1.212	0.0003281	0.416	0.0010390	1.321	0.0009206	1.165	0.0019097*	2.391
SBI Life Insurance Company Limited	-0.003396*	-3.043	0.0024845*	2.218	0.0008642	0.773	0.0001559	0.140	0.0015255	1.352
State Bank of India	-0.0008571	-0.872	0.0002851	0.291	0.0015927	1.632	-0.0001329	-0.136	0.0010917	1.102

Table 9: Descriptive Statistics for Materials Sector for daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Asian Paints Limited	-0.1511480	0.0848258	0.0007088	0.0003653	-0.1907100	4.9064520	2493.00	0.00
Coal India Limited	-0.0834460	0.1187477	0.0001795	0.0000000	0.2615478	2.2500150	549.86	0.00
Grasim Industries Limited	-0.2004290	0.1313985	0.0005303	0.0002798	-0.3166140	9.2169810	8781.80	0.00
Hindalco Industries Limited	-0.1825111	0.1575232	0.0006307	0.0002542	-0.0589493	2.7720880	793.04	0.00
JSW Steel Limited	-0.1964750	0.1165980	0.0010230	0.0011430	-0.3987190	4.8758740	2512.60	0.00
Tata Steel Limited	-0.1407529	0.1279932	0.0006078	0.0005164	-0.1071222	2.5211960	659.64	0.00
Ultra Tech Cement Limited	-0.1569129	0.1211587	0.0005488	0.0002100	-0.1254374	5.0591640	2641.00	0.00
UPL Limited	-0.1645886	0.1829725	0.0009301	0.0009738	0.0151531	6.0155990	3724.40	0.00

Table 10: Regression Results for Materials Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Asian Paints Limited	-0.0004305	-0.568	0.0011121	1.474	0.0011694	1.553	0.0008844	1.170	0.0008013	1.048
Coal India Limited	0.0006859	0.810	-0.0001527	-0.181	0.0007192	0.855	-0.0005551	-0.658	0.0002122	0.249
Grasim Industries Limited	-0.0000587	-0.069	0.0010500	1.245	0.0010300	1.229	-0.0003530	-0.418	0.0010100	1.184
Hindalco Industries Limited	0.0001235	0.105	0.0013846	1.182	0.0015370	1.315	0.0015843	1.350	-0.0015269	-1.286
JSW Steel Limited	-0.0011590	-1.127	0.0019560	1.910	0.0015970	1.563	0.002688*	2.620	-0.0000209	-0.020
Tata Steel Limited	-0.0009089	-0.830	0.0012644	1.161	0.0012236	1.125	0.0008534	0.782	0.0005520	0.500
UltraTech Cement Limited	-0.0001338	-0.166	0.0020343*	2.542	0.0006125	0.767	-0.0002617	-0.326	0.0004825	0.595
UPL Limited	0.0015970	1.534	0.0000801	0.077	0.0019430	1.879	0.0007135	0.687	0.0002811	0.268

Table 11: Descriptive Statistics for Consumer Discretionary Sector for daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Hero Moto Corp Limited	-0.1165000	0.1227000	0.0002835	0.0000741	0.1625438	4.6051870	2194.00	0.00
Maruti Suzuki India Limited	-0.1852358	0.1267637	0.0007730	0.0001745	-0.1033149	9.1638240	8644.50	0.00
Tata Motors Limited	-0.1933751	0.1860372	0.0001752	0.0000000	0.2144595	6.2081260	3985.30	0.00
Titan Company Limited	-0.1480910	0.1721653	0.0009754	0.0006114	0.0793284	8.2937670	7080.30	0.00

Table 12: Regression Results for Consumer Discretionary Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Hero MotoCorp Limited	-0.0009640	-1.208	0.0009447	1.190	0.0001954	0.247	0.0012090	1.520	0.0000180	0.022
Maruti Suzuki India Limited	0.0003687	0.446	0.0024707*	3.004	0.0004833	0.589	0.0002008	0.244	0.0003284	0.394
Tata Motors Limited	-0.0010307	-0.856	0.0017783	1.454	-0.0004394	-0.367	0.0006358	0.530	-0.0004320	-0.356
Titan Company Limited	0.0015623	1.675	0.0026281*	2.833	-0.0008659	-0.935	0.0013511	1.453	0.0002259	0.240

Table 13: Descriptive Statistics for Consumer Staples Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Britannia Industries Limited	-0.1435260	0.1467421	0.0011814	0.0003111	0.4411385	8.3292250	7218.40	0.00
Hindustan Unilever Limited	-0.0928907	0.1602645	0.0007234	0.0000000	1.2067860	10.9519900	12939.00	0.00
ITC Limited	-1.3337770	0.0957251	0.0004173	0.0001989	-0.5460525	8.3739890	7337.90	0.00
Nestlé India Limited	-0.0949583	0.1204817	0.0006280	0.0001618	0.3651009	4.9778930	2605.50	0.00
Tata Consumer Products Limited	-0.1539616	0.1069051	0.0007276	0.0004640	-0.1147981	5.3080520	2905.50	0.00

Table 14: Regression Results for Consumer Staples Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Britannia Industries Limited	0.0011082	1.471	0.0007987	1.065	0.0024721*	3.304	0.0009829	1.308	0.0005235	0.689
Hindustan Unilever Limited	0.0005039	0.743	0.0012260	1.817	0.001718*	2.551	0.0000791	0.117	0.0000703	0.103
ITC Limited	-0.0006861	-0.933	0.0002164	0.296	-0.0000091	-0.012	0.001506*	2.055	0.0010340	1.395
Nestlé India Limited	-0.0007036	-1.041	0.0004311	0.641	0.0009375	1.396	0.0013253*	1.966	0.0011511	1.689
Tata Consumer Products Limited	-0.0002073	-0.231	0.0008211	0.918	0.0012010	1.346	0.0004577	0.511	0.0013593	1.500

Table 15: Descriptive Statistics for Communication Services Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Bharti Airtel Limited	-0.1272980	0.1069762	0.0004382	-0.0001660	0.3455589	2.9718790	958.82	0.00

Table 16: Regression Results for Communication Services Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Bharti Airtel Limited	0.0001550	0.173	0.0014300	1.603	-0.0000142	-0.016	-0.0002450	-0.274	0.0008610	0.953

Table 17: Descriptive Statistics for Energy Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Bharat Petroleum Corporation Limited	-0.2217100	0.1427246	0.0005821	0.0002575	-0.5467130	7.9816840	6678.10	0.00
Oil and Natural Gas Corporation Limited	-0.1715000	0.1698000	0.0000449	0.0003360	-0.2514354	8.1727380	6898.70	0.00
Reliance Industries Limited	-0.1413240	0.1373070	0.0007288	0.0005201	0.0537189	7.1831770	5310.80	0.00

Table 18: Regression Results for Energy Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Bharat Petroleum Corporation Limited	-0.0004325	-0.429	0.0004186	0.418	-0.0012101	-1.210	0.0017423	1.735	0.0023377*	2.302
Oil and Natural Gas Corporation Limited	-0.0010026	-1.016	0.0005975	0.609	-0.0003147	-0.321	-0.0004896	-0.498	0.0014408	1.449
Reliance Industries Limited	-0.0010387	-1.282	0.001724*	2.138	0.0016815*	2.090	-0.0002720	-0.337	0.0015374	1.882

Table 19: Descriptive Statistics for Information Technology Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
HCL Technologies Limited	-0.1362480	0.1059396	0.0007735	0.0011646	-0.2822090	4.4257950	2049.20	0.00
Infosys Limited	-0.2390014	0.1136273	0.0006299	0.0008754	-1.4551170	22.2262500	51682.00	0.00
LTI Mind tree Limited	-0.1560269	0.1490568	0.0012040	0.0001472	0.3270234	5.5223070	2139.10	0.00
Tata Consultancy Services Limited	-0.0988302	0.0939010	0.0006452	0.0006197	-0.1904121	3.4482460	1239.40	0.00
Tech Mahindra Limited	-0.1680403	0.0957360	0.0006452	0.0006682	-0.6921565	6.8222410	4986.60	0.00
Wipro Limited	-0.1309880	0.1551025	0.0003580	0.0006471	0.0565782	7.8185100	6291.40	0.00

Table 20: Regression Results for Information Technology Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
HCL Technologies Limited	0.0007650	0.960	0.0010700	1.346	0.0014500	1.828	-0.0000187	-0.024	0.0006010	0.748
Infosys Limited	0.0007883	0.991	0.0007148	0.903	0.0006546	0.829	0.0003554	0.448	0.0005863	0.731
LTI Mindtree Limited	-0.0006146	-0.519	0.0029638*	2.511	0.0036119*	3.074	0.0002504	0.213	-0.0002256	-0.190
Tata Consultancy Services Limited	0.0014463*	2.060	0.0008645	1.237	0.0005288	0.758	0.0001504	0.215	0.0002330	0.326
Tech Mahindra Limited	-0.0000621	-0.073	0.0015980	1.878	0.0010850	1.277	-0.0007150	-0.838	0.0013070	1.515
Wipro Limited	0.0002468	0.333	0.0010100	1.368	0.0010300	1.398	-0.0004714	-0.637	-0.0000542	-0.073

Table 21: Descriptive Statistics for Utilities Sector for Daily Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
NTPC Limited	-0.1248862	0.1010962	0.0003002	0.0000000	-0.2222959	4.1166790	1765.10	0.00
Power Grid Corporation of India Limited	-0.1185740	0.0697210	0.0006140	0.0000000	-0.2146863	4.2891770	1912.90	0.00

Table 22: Regression Results for Utilities Sector for Daily Returns

Company Name	Monday		Tuesday		Wednesday		Thursday		Friday	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
NTPC Limited	-0.0000534	-0.069	0.0011970	1.559	-0.0003712	-0.484	0.0001167	0.152	0.0006268	0.806
Power Grid Corporation of India Limited	0.0010255	1.457	0.0011786	1.683	-0.0001205	-0.172	0.0012266	1.748	-0.0002354	-0.332

B. Month-of-the-Year Effect:

➤ *Industrials Sector (Table 23 & Table 24)*

Within the industrials sector, comprising four distinct companies, a noteworthy divergence in return characteristics is evident. Through the application of the Jarque-Bera test, it is discerned that three of these companies exhibit heteroscedastic returns, while one displays a homoscedastic pattern, as outlined in Table 23. The skewness value of the returns accentuates their negative skew, indicating a consistent tendency for returns to surpass the average, thus shaping a left-tailed distribution.

Remarkably, the efficiency of the returns from these four companies becomes apparent. Despite some discernible inefficiencies in companies such as Eicher Motors, particularly noteworthy in April, and Adani Enterprises, marked by significance in September, the overall efficiencies outweigh these inefficiencies. Consequently, the market returns for these companies reflect a high degree of efficiency, as detailed in Table 24.

Strategic entry and exit planning for investors within this sector become paramount. A prudent strategy involves initiating long positions in January, capitalizing on historical trends, and subsequently closing these positions in March. This timing aligns with a common market practice where investors frequently book profits and reconcile losses incurred during the financial year-end. By aligning investment decisions with such temporal trends, investors can navigate the industrials sector effectively, optimizing their positions and capitalizing on the efficiency trends apparent in the returns of these companies.

➤ *Health Care Sector (Table 25 & Table 26)*

In the Health Care sector, encompassing five companies within the Nifty Fifty Index, only one exhibits a homoscedastic distribution of returns, diverging from the heteroscedastic pattern observed in the remaining four companies. Notably, the returns demonstrate a predominantly negative skewness, suggesting that they consistently surpass the average returns. This asymmetry indicates a left-tailed distribution, emphasizing the sector's resilience and potential for higher-than-average returns.

The market dynamics of the health care sector reveal a distinct influence of the monsoon months in India. These months hold substantial significance in driving market returns, primarily attributed to the surge in revenue resulting from seasonal illnesses. Pharmaceutical companies, integral to the sector, experience heightened revenue levels owing to increased sales of medications and related products during this period. This phenomenon underscores the sector's sensitivity to environmental factors, presenting investors with a strategic opportunity.

For potential investors, crafting a well-thought-out entry strategy is crucial. Planning entry points during the month of January aligns with historical trends and positions investors to leverage the subsequent market dynamics. Moreover, strategic exits between June and August align with the conclusion of the monsoon season, enabling investors to capitalize on the anticipated rise in market activity during this period. By aligning investment decisions with these temporal patterns, investors can optimize their portfolio performance within the dynamic and seasonally influenced landscape of the health care sector.

➤ *Financials Services Sector (Table 27 & Table 28)*

In the Financial Services sector, comprised of 10 constituents forming part of the Nifty Fifty index, returns exhibit a negative skewness, underscoring that median returns surpass average returns from these companies over the past decade. However, the Jarque-Bera Test indicates that, except for one company, returns for the majority are non-normally distributed. This suggests that the financial sector investments have been lucrative for investors, characterized by higher returns and a left-tailed distribution.

While monthly variations in returns are generally non-significant, the month of June stands out with certain anomalies. These anomalies can be attributed to companies announcing their results for the preceding financial year, heightening investor and speculator expectations.

For strategic planning, investors can strategically time their entry into the Financial Services sector. Entering positions in the month of March aligns with the observed trend where investors typically plan to book losses. Subsequently, planning exits during the month of June, coinciding with results announcements, provides an opportunity to capitalize on abnormal profits and contribute

to wealth creation. This strategic approach leverages the annual cycle of investor behavior and market dynamics within the Financial Services sector, enabling investors to optimize their positions for potential gains.

➤ *Materials Sector (Table 29 & Table 30)*

Within the materials sector, comprising eight index-included companies, a notable distinction emerges as half of these companies exhibit heteroscedastic returns, while the other half display homoscedastic data. Skewness analysis reveals that six of the companies showcase median returns surpassing mean returns, while the remaining two, specifically Asian Paints and Coal India Limited, present positively skewed returns.

Anomalies in stock returns become more pronounced in the first half of the year, with statistical significance observed in March for some companies. This phenomenon is attributed to the upcoming summer season in India, fostering heightened construction activities. The increased demand for raw materials during this period contributes to business expansion and higher revenue for companies engaged in supplying materials for construction activities.

For individual investors, strategic planning involves considering entry points with long positions throughout the year, excluding March. This strategic exclusion aligns with the observed statistical significance in returns during this particular month. By avoiding entry in March, investors position themselves to benefit from significant returns in the subsequent months, leveraging the increased business activity and wealth creation potential within the materials sector. This approach capitalizes on observed market dynamics and industry-specific trends, providing a nuanced strategy for individual investors seeking optimal returns and wealth creation opportunities in the materials sector.

➤ *Consumer Discretionary Sector (Table 31 & Table 32)*

Within the industry encompassing six companies in the determination of the index (with two excluded due to statistical package limitations), a consistent pattern of heteroscedastic returns has prevailed over the past decade on a monthly basis. Among the four studied companies, three exhibit negative skewness, signifying that their median returns surpass the mean returns. The left-tailed distribution prevalent among the majority of these companies indicates that the market performance within this industry has been wealth-generating for investors.

Noteworthy statistical significance in returns is discernible during the second quarter of the financial year. This period aligns with the Annual General Meetings of the companies and the unveiling of various future plans. Investors can strategically plan their exit strategy for long positions during these months, capitalizing on the observed abnormal returns generated by companies within this industry.

This strategic approach leverages insights from the industry's historical performance, highlighting specific months of significance. By aligning exit strategies with the period of Annual General Meetings and future plans

announcements, investors can position themselves to capture abnormal returns and enhance wealth creation. This nuanced understanding of industry dynamics provides a valuable tool for investors seeking to optimize their investment strategies within this particular sector, maximizing opportunities for generating abnormal returns.

➤ *Consumer Staples Sector (Table 33 & Table 34)*

Within the consumer staples industry, distinguished as the sole industry with a year-round business cycle, normal returns characterize four out of the five companies, as indicated by the Jarque-Bera test. Notably, three companies display positive skewness in returns, while two exhibit negative skewness.

The industry's performance unveils statistically significant differences in returns during the first half of the calendar year, followed by a more stable trend in the second half. For investors seeking to capitalize on anomalies in these returns, a strategic exit strategy involves divesting from long positions in the initial half of the year. Conversely, planning entry into such positions during months marked by lower or negative returns aligns with the observed patterns within the industry.

This strategic approach leverages insights from the industry's year-round business cycle and distinct trends in return patterns. By synchronizing exit and entry strategies with the observed fluctuations in returns, investors can position themselves to optimize returns and navigate the unique dynamics of the consumer staples industry. This nuanced understanding provides a valuable tool for investors seeking to make informed decisions within this specific sector, ensuring their strategies align with the observed patterns for potential gains.

➤ *Communications Services Sector (Table 35 & Table 36)*

Within the communication services sector, represented solely by Bharti Airtel (Airtel) in the Nifty Fifty index, the company's returns exhibit a normal distribution with a notable negative skewness. This skewness suggests that the returns for Airtel tend to lean more towards the higher side of the mean returns, indicating a generally positive performance trend.

Over the past decade, Airtel's market returns demonstrate a lack of statistically higher or lower returns, indicative of an efficient market performance. This efficiency implies that the market prices quickly reflect available information, leaving limited opportunities for investors to exploit discrepancies for abnormal profits.

For investors contemplating entry into this industry, a strategic approach involves initiating long positions during the month of July. Concurrently, planning an exit strategy during the month of June is recommended. These strategic entry and exit points are aligned with observed market dynamics and may provide investors with optimal opportunities to capitalize on potential fluctuations in Airtel's returns.

This nuanced understanding of Airtel's return patterns and the efficiency of its market performance can guide investors in making informed decisions. By strategically timing their entry and exit based on historical trends, investors may enhance their chances of maximizing returns within the communication services sector.

➤ *Energy Sector (Table 37 & Table 38)*

In the energy sector, encompassing three companies, including the prominent Reliance Industries, the returns exhibit a normal distribution. However, a notable distinction arises in the skewness pattern, with public-sector enterprises displaying negative skewness, while Reliance Industries showcases a positive skewness. This implies that the returns for public-sector companies tend to be generally higher than the mean, while the private sector's returns may not follow the same trend.

The month of March emerges with statistical significance in terms of market returns, particularly noticeable within the private sector. Conversely, the public sector exhibits no such anomaly, suggesting efficient market dynamics for those companies. Investors can strategically plan their approaches, considering entering long positions during the months of December or January. Subsequently, planning an exit during the month of March aligns with the observed trend of comparatively higher returns, providing an opportunity to capitalize on potential market anomalies.

This nuanced understanding of the energy sector's return distribution and the divergent skewness patterns between public and private enterprises offers valuable insights for investors. By aligning their strategies with historical anomalies and market efficiencies, investors can optimize their entry and exit points, potentially maximizing returns within this specific sector.

➤ *Information Technology Sector (Table 39 & Table 40)*

Within the Information Technology (IT) Sector, comprising six companies, a comprehensive analysis reveals that four of these companies exhibit a normal distribution of returns. Notably, the skewness of the returns displays a dual pattern, with three companies showcasing negative skewness and the remaining three exhibiting positive skewness. The positive skewness indicates that the median returns tend to be lower than the mean, signifying a right-tailed distribution and suggesting that market returns have generally fallen short of their average performance.

The month of June emerges as a pivotal period with a notably high degree of significant returns compared to other months. This phenomenon can be attributed to the companies

within the sector typically releasing their Annual Financial Statements during June. The anticipation of improved performance during this release period contributes to the month's heightened significance.

For strategic planning, investors may consider entering into long positions during the month of March, leveraging the observed negative trend in returns for sector companies during this period. Subsequently, these positions could be closed out during the month of June, capitalizing on the historically higher returns associated with the release of Annual Financial Statements and heightened market expectations.

This strategic approach aligns with the industry-specific dynamics and temporal patterns observed within the IT sector. By capitalizing on the timing of financial statement releases and aligning with historical return trends, investors can optimize their entry and exit points, potentially enhancing their overall returns within the IT sector.

➤ *Utilities Sector (Table 41 & Table 42)*

The Utilities sector presents a varied distribution pattern within its two constituent companies, featuring one with a heteroscedastic distribution and the other with a homoscedastic distribution. Similarly, the skewness within the sector follows a diverse trend, with one company exhibiting positively skewed returns and the other displaying negatively skewed returns.

Despite these variations, the market returns for both companies are characterized by efficiency, indicating a lack of significant anomalies on a monthly basis. The absence of observable monthly anomalies suggests a stable and well-regulated market environment for these utility companies.

For strategic planning, investors may find an opportunity in the month of March, as it serves as a viable period to book profits. The significance of March aligns with the year-end practices, where many investors opt to capitalize on their investments and secure profits. Leveraging this observed trend, investors can strategically plan to exit positions during this month, taking advantage of the market dynamics associated with year-end profit booking.

This strategic approach acknowledges the distinct distribution patterns within the Utilities sector and provides investors with a practical guide to optimizing their investment decisions. By understanding the market efficiency and aligning with observed trends, investors can navigate the sector's dynamics to potentially enhance their overall returns.

Table 23: Descriptive Statistics for Industrials Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Adani Enterprises Limited	-0.7824600	0.5465900	0.0343800	0.0479800	-1.0714090	5.0941920	159.08	0.00
Adani Ports and Special Economic Zone Limited	-0.3087500	0.2822200	0.0128100	0.0159800	-0.4460523	0.7098471	7.01	0.03
Eicher Motors Limited	-0.2372500	0.2379700	0.0197400	0.0186000	-0.1148098	0.1312474	0.44	0.80
Larsen & Toubro Limited	-0.3844700	0.2106500	0.0112000	0.0140900	-0.6713819	3.1029440	60.16	0.00

Table 24: Regression Results for Industrials Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Adani Enterprises Limited	-0.03850	-0.64200	0.06187	1.03200	0.06672	1.05600	0.02017	0.33600	-0.04558	-0.76000	0.03188	0.53200
Adani Ports and Special Economic Zone Limited	0.01690	0.53000	0.02369	0.74200	0.04841	1.43900	0.01126	0.35300	-0.00379	-0.11900	0.01329	0.41600
Eicher Motors Limited	-0.00502	-0.17500	-0.00053	-0.01900	0.03055	1.00900	0.0761879*	2.65200	0.00734	0.25500	0.03398	1.18300
Larsen & Toubro Limited	-0.00657	-0.24600	-0.00329	-0.12300	0.01769	0.62800	0.05090	1.90500	0.00486	0.18200	-0.00324	-0.12100
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Adani Enterprises Limited	0.07133	1.19000	-0.01629	-0.27200	0.13468*	2.24700	0.07042	1.17500	0.04538	0.75700	0.01367	0.22800
Adani Ports and Special Economic Zone Limited	0.05684	1.78100	-0.02748	-0.86100	0.03003	0.94100	0.01101	0.34500	0.02048	0.64200	-0.04336	-1.35900
Eicher Motors Limited	0.02702	0.94100	0.04660	1.62200	0.01810	0.63000	0.01907	0.66400	0.01110	0.38600	-0.02646	-0.92100
Larsen & Toubro Limited	-0.01369	-0.51200	-0.00661	-0.24700	0.058649*	2.19400	0.01727	0.64600	0.00771	0.28800	0.01134	0.42400

Table 25: Descriptive Statistics for Health Care Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Apollo Hospitals Enterprise Limited	-0.4194640	0.2885650	0.0141520	0.0093260	-0.2922129	2.3973240	32.46	0.00
Cipla Limited	-0.1513900	0.3350200	0.0070700	0.0072300	0.6840861	2.1229350	33.74	0.00
Divi's Laboratories Limited	-0.4041500	0.2060500	0.0147700	0.0242200	-1.0665680	3.4856090	87.26	0.00
Dr. Reddy's Laboratories Limited	-0.3193070	0.2321680	0.0075720	0.0137610	-0.4556926	2.2393310	31.11	0.00
Sun Pharmaceutical Industries Limited	-0.2467070	0.2763710	0.0066590	0.0023780	-0.0033659	0.3145411	0.68	0.71

Table 26: Regression Results for Health Care Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Apollo Hospitals Enterprise Limited	0.02452	0.78400	-0.0763*	-2.44000	0.01540	0.47600	0.00235	0.07500	0.04699	1.50300	0.03144	1.00500
Cipla Limited	-0.04449	-1.96900	0.01185	0.52500	0.054706*	2.29700	-0.03130	-1.38500	0.03459	1.53100	0.03689	1.63300
Divi's Laboratories Limited	0.00028	0.01100	-0.00056	-0.02100	0.05250	1.86200	-0.05489*	-2.05300	0.03036	1.13500	0.0536765*	2.00700
Dr. Reddy's Laboratories Limited	-0.01504	-0.62300	0.00513	0.21300	0.04458	1.75100	-0.00569	-0.23600	0.03439	1.42400	-0.01472	-0.60900
Sun Pharmaceutical Industries Limited	-0.01372	-0.52800	0.00933	0.35900	0.03679	1.34500	-0.04620	-1.77700	0.02019	0.77600	0.067963*	2.61400
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Apollo Hospitals Enterprise Limited	0.04372	1.39800	-0.00137	-0.04400	0.00667	0.21300	0.04261	1.36300	0.01108	0.35400	0.02285	0.73100
Cipla Limited	0.02491	1.10300	0.03025	1.33900	0.01517	0.67200	-0.03485	-1.54300	0.00293	0.13000	-0.01106	-0.49000
Divi's Laboratories Limited	0.076408*	2.85700	0.02294	0.85800	0.03628	1.35600	0.01752	0.65500	-0.02044	-0.76400	-0.03308	-1.23700
Dr. Reddy's Laboratories Limited	0.01997	0.82700	0.056771*	2.35000	0.01115	0.46100	-0.01729	-0.71600	-0.00612	-0.25300	-0.01859	-0.77000
Sun Pharmaceutical Industries Limited	0.00600	0.23100	-0.00271	-0.10400	0.01525	0.58600	-0.03918	-1.50700	0.00744	0.28600	0.02177	0.83700

Table 27: Descriptive Statistics for Financial Services Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Axis Bank Limited	-0.6096790	0.2116210	0.0093350	0.0141970	-1.6335900	8.6397060	441.57	0.00
Bajaj Finserv Limited	-0.6787100	0.4520400	0.0239100	0.0234500	-1.1170450	9.2533210	469.29	0.00
Bajaj Finance Limited	-0.7008500	0.3943800	0.0324600	0.0317800	-1.4336630	10.1522600	575.64	0.00
HDFC Bank Limited	-0.3121370	0.1967150	0.0136230	0.0054870	-0.7196129	5.2081150	152.30	0.00
HDFC Life Insurance Company Limited	-0.2092900	0.1330100	0.0043000	0.0186800	-0.5525937	-0.1679829	3.38	0.18
ICICI Bank Limited	-0.4291200	0.2378700	0.0129200	0.0127700	-0.7471947	3.4574330	74.46	0.00
IndusInd Bank Limited	-1.1451000	0.3813880	0.0073660	0.0115540	-3.7439270	28.9241800	4590.60	0.00
Kotak Mahindra Bank Limited	-0.2233200	0.2090100	0.0134100	0.0170100	-0.1512649	0.8430042	4.56	0.10
SBI Life Insurance Company Limited	-0.3286400	0.1796100	0.0082900	0.0165500	-1.3637610	3.6993340	61.64	0.00
State Bank of India	-0.4312910	0.3242700	0.0078310	0.0054740	-0.2582446	2.0654350	24.31	0.00

Table 28: Regression Results for Financial Services Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Axis Bank Limited	-0.00774	-0.22800	-0.02851	-0.83900	0.03244	0.90600	0.02233	0.65700	-0.01251	-0.36800	-0.01353	-0.39800
Bajaj Finserv Limited	0.02663	0.70700	-0.03695	-0.98100	0.05568	1.40200	-0.01843	-0.48900	0.04331	1.14900	0.1001135*	2.65700
Bajaj Finance Limited	0.02795	0.70600	-0.02229	-0.56300	0.02463	0.59000	0.04289	1.08300	0.07368	1.86100	0.088828*	2.24300
HDFC Bank Limited	-0.00074	-0.03700	0.00245	0.12200	0.01312	0.61800	0.04443	2.20700	0.00935	0.46400	0.00720	0.35800
HDFC Life Insurance Company Limited	-0.063791*	-2.02400	-0.01820	-0.57800	0.07242*	2.09800	0.02138	0.61900	-0.00572	-0.16600	0.05433	1.57400
ICICI Bank Limited	-0.03229	-1.16000	-0.00938	-0.33700	0.03353	1.14300	0.02919	1.04900	-0.01883	-0.67700	0.03447	1.23900
IndusInd Bank Limited	0.00462	0.09500	-0.04972	-1.02900	0.02639	0.51800	0.02304	0.47700	-0.01369	-0.28300	0.04572	0.94600
Kotak Mahindra Bank Limited	-0.00576	-0.26900	0.00432	0.20100	0.04172	1.84600	0.04895	2.28300	-0.01440	-0.67200	0.01065	0.49700
SBI Life Insurance Company Limited	-0.05349	-1.68200	-0.04828	-1.51900	0.06996*	2.00900	0.03635	1.04400	0.00351	0.10100	0.10075*	2.89300
State Bank of India	-0.02492	-0.76300	0.00246	0.07500	-0.00512	-0.14900	0.03832	1.17300	0.00972	0.29700	0.02646	0.81000
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Axis Bank Limited	0.02010	0.59200	-0.01971	-0.58000	0.05719	1.68400	0.01545	0.45500	0.02377	0.70000	0.02504	0.73700
Bajaj Finserv Limited	0.05540	1.47000	0.00509	0.13500	0.00024	0.00600	0.07035	1.86700	0.01721	0.45700	-0.02849	-0.75600
Bajaj Finance Limited	0.04081	1.03100	0.01131	0.28600	0.02304	0.58200	0.03536	0.89300	0.03749	0.94700	0.00512	0.12900
HDFC Bank Limited	0.00946	0.47000	0.00759	0.37700	0.02921	1.45100	0.03293	1.63600	0.00147	0.07300	0.00695	0.34500
HDFC Life Insurance Company Limited	0.01237	0.35800	-0.03809	-1.10300	0.00039	0.01100	0.03073	0.89000	0.00452	0.13100	0.00020	0.00600
ICICI Bank Limited	0.01705	0.61300	-0.03209	-1.15300	0.10680	3.83800	0.02190	0.78700	0.01245	0.44800	-0.00576	-0.20700
IndusInd Bank Limited	0.00541	0.11200	0.01067	0.22100	0.01442	0.29800	0.03957	0.81900	0.01440	0.29800	-0.03054	-0.63200
Kotak Mahindra Bank Limited	0.01096	0.51100	-0.00104	-0.04900	0.05304	2.47400	0.03005	1.40200	-0.00345	-0.16100	-0.01131	-0.52800
SBI Life Insurance Company Limited	0.00810	0.23300	-0.06518	-1.87200	0.02984	0.85700	0.02176	0.62500	0.02706	0.85100	-0.00778	0.24500
State Bank of India	-0.02643	-0.80900	-0.03207	-0.98200	0.08218	2.51600	0.06003	1.83800	-0.00759	-0.23200	-0.03038	-0.93000

Table 29: Descriptive Statistics for Materials Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Asian Paints Limited	-0.1871800	0.2214720	0.0155420	0.0059770	0.3433443	0.3345467	3.16	0.21
Coal India Limited	-0.2162231	0.2396924	0.0035717	-0.0003758	0.1624445	0.0310899	0.57	0.75
Grasim Industries Limited	-0.3670000	0.1949800	0.0112900	0.0204800	-0.7975841	2.5476610	47.55	0.00
Hindalco Industries Limited	-0.4879960	0.4078190	0.0126410	0.0067490	-0.1463306	1.7609070	17.26	0.00
JSW Steel Limited	-0.4772400	0.4268300	0.0207600	0.0234000	-0.3154163	4.3080000	99.44	0.00
Tata Steel Limited	-0.3478300	0.3409500	0.0130300	0.0168600	-0.0529520	0.2804952	0.62	0.73
UltraTech Cement Limited	-0.2626700	0.2043800	0.0119700	0.0180100	-0.2244665	0.4157196	2.14	0.34
UPL Limited	-0.4648200	0.3739800	0.0180400	0.0156800	-0.3402474	3.8369060	79.85	0.00

Table 30: Regression Results for Materials Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Asian Paints Limited	-0.00569	-0.25700	0.02660	1.20200	0.00602	0.25800	0.02658	1.20100	-0.00743	-0.33600	0.097783*	4.42000
Coal India Limited	0.03673	1.35400	-0.03409	-1.25600	0.05479	1.91600	0.04435	1.63500	-0.01799	-0.66300	-0.01596	0.55800
Grasim Industries Limited	0.00054	0.02000	0.01991	0.72600	0.01999	0.69200	0.02126	0.77500	0.01171	0.42700	0.02248	0.82000
Hindalco Industries Limited	0.01181	0.29400	-0.01912	-0.47500	0.04484	1.05800	0.02079	0.51700	-0.01550	-0.38600	0.05457	1.35700
JSW Steel Limited	0.00287	0.08600	0.00366	0.10900	0.110843*	3.14000	-0.03197	-0.95400	0.00490	0.14600	0.01773	0.52900
Tata Steel Limited	-0.00922	-0.24800	0.00148	0.04000	0.06565	1.67500	-0.01678	-0.45100	-0.00336	-0.09000	0.01826	0.49100
UltraTech Cement Limited	0.01171	0.45000	0.01798	0.69000	0.01060	0.38600	0.02821	1.08300	-0.00112	-0.04300	0.04459	1.71200
UPL Limited	-0.02224	-0.71000	0.02353	0.75100	0.108143*	3.27500	0.070473*	2.24900	-0.05245	-1.67400	0.03725	1.18900
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	the	T-Value	Coefficient	T-Value	Coefficient	T-Value
Asian Paints Limited	0.00140	0.06300	0.01285	0.58100	0.01200	0.54200	0.00221	0.10000	0.02950	1.33300	-0.01626	-0.73500
Coal India Limited	-0.02062	-0.76000	0.01130	0.41700	0.01904	0.70200	-0.03137	-1.15600	0.02254	0.83100	-0.02073	-0.76400
Grasim Industries Limited	-0.00712	-0.26000	0.04240	1.54600	0.01498	0.54600	-0.00197	-0.07200	-0.01297	-0.47300	0.00510	0.18600
Hindalco Industries Limited	0.03283	0.81600	-0.02666	-0.66300	0.02616	0.65100	0.04622	1.15000	0.03269	0.81300	-0.05370	-1.33600
JSW Steel Limited	0.075683*	2.26000	0.01183	0.35300	0.03225	0.96300	0.02244	0.67000	0.03092	0.92300	-0.02308	-0.68900
Tata Steel Limited	0.03721	1.00000	-0.04507	-1.21200	0.07601	2.04400	0.03450	0.92800	0.02822	0.75900	-0.02523	-0.67800
UltraTech Cement Limited	-0.01759	-0.67500	-0.00253	-0.09700	0.03235	1.24200	0.00037	0.01400	-0.00400	-0.15400	0.02292	0.88000
UPL Limited	0.00186	0.05900	-0.01003	-0.32000	0.02427	0.77500	-0.02862	-0.91400	0.04104	1.31000	0.03232	1.03200

Table 31: Descriptive Statistics for Consumer Discretionary Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Hero MotoCorp Limited	-0.2229400	0.3054230	0.0054950	-0.0010410	0.1378602	1.3656830	10.67	0.00
Maruti Suzuki India Limited	-0.3819700	0.2228500	0.0141200	0.0194800	-0.8620908	2.8672450	58.77	0.00
Tata Motors Limited	-0.5960409	0.4140841	0.0030294	0.0002376	-0.0418241	2.7435110	40.06	0.00
Titan Company Limited	-0.2953400	0.2539400	0.0191600	0.0326200	-0.6024481	0.7850087	10.96	0.00

Table 32: Regression Results for Consumer Discretionary Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Hero MotoCorp Limited	-0.054123*	-2.29300	-0.00916	-0.38800	0.03131	1.25800	0.071852*	-3.04400	-0.00173	-0.07300	0.00431	0.18200
Maruti Suzuki India Limited	-0.05241	-1.89300	-0.01442	-0.52100	0.02903	0.99500	0.05047	1.82300	0.02391	0.86400	0.00878	0.31700
Tata Motors Limited	-0.05036	-1.16200	-0.06661	-1.53700	0.05691	1.24600	-0.02318	-0.53500	-0.02672	-0.61600	-0.01311	-0.30200
Titan Company Limited	0.02369	0.75900	0.02112	0.67700	0.00409	0.12400	0.01433	0.45900	0.01113	0.35600	0.01588	0.50900
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Hero MotoCorp Limited	0.047396*	2.00800	-0.00973	-0.41200	0.00334	0.14100	0.00262	0.11100	-0.00177	-0.07500	-0.01580	-0.66900
Maruti Suzuki India Limited	0.02201	0.79500	0.04002	1.44500	0.04606	1.66400	-0.00156	-0.05600	0.02516	0.90900	-0.00612	-0.22100
Tata Motors Limited	0.01821	0.42000	-0.02582	-0.59600	0.110343*	2.54600	0.01016	0.24300	-0.00306	-0.07100	0.05497	1.26800
Titan Company Limited	0.03988	1.27800	0.02256	0.72300	0.04451	1.42700	0.00499	0.16000	0.02013	0.64500	0.00613	0.19600

Table 33: Descriptive Statistics for Consumer Staples Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Britannia Industries Limited	-0.1456800	0.2223000	0.0237900	0.0245300	0.2126960	-0.4238697	1.64	0.44
Hindustan Unilever Limited	-0.1213100	0.2044700	0.0138800	0.0107600	0.5978529	0.4789697	8.71	0.01
ITC Limited	-0.1891520	0.1723180	0.0070010	0.0072250	-0.2763218	0.6124937	3.81	0.15
Nestlé India Limited	-0.1755400	0.1617200	0.0126000	0.0155300	-0.1443192	0.0112850	0.44	0.80
Tata Consumer Products Limited	-0.2001880	0.2351010	0.0143370	0.0025040	0.1727232	-0.3316765	1.01	0.60

Table 34: Regression Results for Consumer Staples Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Britannia Industries Limited	0.00664	0.29800	-0.01170	-0.52500	0.03928	1.67200	0.05860	2.63000	0.02676	1.20100	0.05506	2.47100
Hindustan Unilever Limited	-0.01996	-1.11500	0.03445	1.92500	0.01033	0.54800	0.02601	1.45400	0.02258	1.26200	0.04784*	2.67300
ITC Limited	-0.01477	-0.73800	0.02520	1.25900	0.00714	0.33900	0.03179	1.58900	-0.00739	-0.36900	0.03680	1.83900
Nestlé India Limited	-0.02122	-1.19100	0.0448842*	2.51900	0.01291	0.68700	0.03045	1.70900	-0.00287	-0.16100	0.0355704*	1.99700
Tata Consumer Products Limited	-0.03111	-1.12600	0.02141	0.77500	0.04474	1.53600	-0.00196	-0.07100	0.03017	1.09200	0.04428	1.60300
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Britannia Industries Limited	0.04597	2.06300	0.03189	1.43100	0.02177	0.97700	0.00603	0.27000	0.00623	0.27900	0.00048	0.02100
Hindustan Unilever Limited	0.03368	1.88200	-0.02178	-1.21700	-0.01143	-0.63900	0.02001	1.11800	0.01231	0.68800	0.01217	0.68000
ITC Limited	0.00101	0.05100	0.00113	0.05600	-0.01201	-0.60000	0.00294	0.14700	0.00180	0.09000	0.01038	0.51900
Nestlé India Limited	0.02594	1.45600	-0.00053	-0.03000	0.0405516*	2.27600	-0.01070	-0.60100	0.01174	0.65900	-0.01546	-0.86800
Tata Consumer Products Limited	0.02551	0.92300	0.00930	0.33700	0.02865	1.03700	0.01860	0.67300	0.01307	0.47300	-0.02758	-0.99800

Table 35: Descriptive Statistics for Communication Services Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Bharti Airtel Limited	-0.1944380	0.2442570	0.0083410	0.0153280	-0.1363185	0.3539297	1.22	0.54

Table 36: Regression Results for Communication Services Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Bharti Airtel Limited	-0.00316	-0.12500	0.00991	0.39100	0.03270	1.22300	0.01219	0.48100	-0.00114	-0.04500	0.03930	1.55000
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Bharti Airtel Limited	-0.02135	-0.84200	-0.01433	-0.56500	0.03558	1.40300	0.01989	0.78400	-0.00325	-0.12800	-0.00382	-0.15000

Table 37: Descriptive Statistics for Energy Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
Bharat Petroleum Corporation Limited	-0.3075220	0.3037760	0.0118740	0.0090030	-0.1759096	0.6450934	3.11	0.21
Oil and Natural Gas Corporation Limited	-0.2973350	0.2287900	0.0008230	0.0083430	-0.1195395	0.2659468	0.80	0.67
Reliance Industries Limited	-0.1764300	0.2748000	0.0156100	0.0074500	0.4231122	0.4739828	5.05	0.08

Table 38: Regression Results for Energy Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Bharat Petroleum Corporation Limited	-0.04060	-1.24700	0.04930	1.51500	0.02260	0.65900	0.02303	0.70800	-0.00114	-0.03500	0.01457	0.44800
Oil and Natural Gas Corporation Limited	-0.02125	-0.73300	-0.01669	-0.57600	0.04672	1.52800	0.01859	0.64100	-0.01555	-0.53600	-0.05623	-1.93900
Reliance Industries Limited	0.00300	0.12000	0.01800	0.71900	0.054282*	2.05600	0.00426	0.17000	0.03322	1.32600	0.04663	1.86200
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
Bharat Petroleum Corporation Limited	0.00851	0.26200	0.00917	0.28200	0.03432	1.05400	0.00795	0.24400	-0.00037	-0.01100	0.01623	0.49900
Oil and Natural Gas Corporation Limited	-0.01248	-0.43000	0.01703	0.58700	0.03622	1.24900	-0.01173	-0.40500	0.03532	1.21800	-0.00548	-0.18900
Reliance Industries Limited	0.01298	0.51800	0.00801	0.32000	0.03337	1.33200	-0.00362	-0.14500	-0.00439	-0.17500	-0.01454	-0.58000

Table 39: Descriptive Statistics for Information Technology Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
HCL Technologies Limited	-0.2024900	0.2361900	0.0168400	0.0138800	0.0574763	0.6016261	2.25	0.33
Infosys Limited	-0.1959400	0.2720000	0.0156400	0.0192400	-0.0848373	0.9178061	4.95	0.08
LTIMindtree Limited	-0.2903100	0.2105700	0.0264200	0.0321700	-0.7181197	0.7560617	9.45	0.01
Tata Consultancy Services Limited	-0.1192870	0.2148720	0.0146830	0.0091340	0.5240949	0.0110191	5.61	0.06
Tech Mahindra Limited	-0.2748700	0.2266700	0.0146500	0.0202900	-0.3702941	0.5425067	4.59	0.10
Wipro Limited	-0.2225850	0.2461410	0.0093960	-0.0015280	0.3156853	1.0935400	8.74	0.01

Table 40: Regression Results for Information Technology Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
HCL Technologies Limited	0.00818	0.34100	-0.01254	-0.52200	-0.00324	-0.12800	0.00650	0.27100	-0.00305	-0.12700	0.064952*	2.70500
Infosys Limited	0.00179	0.08100	-0.00492	-0.22200	-0.03424	-1.46500	0.00926	0.41800	0.02750	1.24000	0.082467*	3.72000
LTIMindtree Limited	0.00894	0.24000	-0.02702	-0.72500	-0.00253	-0.06300	0.04493	1.11500	0.00305	0.07600	0.07083	1.75800
Tata Consultancy Services Limited	-0.00834	-0.40100	-0.00073	-0.03500	0.03017	1.37600	0.01692	0.81300	0.02086	1.00300	0.04502	2.16400
Tech Mahindra Limited	-0.00103	-0.03900	-0.02700	-1.03100	-0.01893	-0.68600	-0.00786	-0.30000	-0.02604	-0.99400	0.05469	2.08700
Wipro Limited	-0.00463	-0.19700	-0.02226	-0.94800	-0.01239	-0.50100	0.00535	0.22800	-0.00180	-0.07700	0.07036*	2.99900
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
HCL Technologies Limited	0.04063	1.69200	0.04187	1.74400	-0.01640	-0.68300	0.00876	0.36500	0.03415	1.42200	0.03031	1.26200
Infosys Limited	0.00528	0.23800	0.00645	0.29100	0.00423	0.19100	0.02920	1.31700	0.02401	1.08300	0.03169	1.43000
LTIMindtree Limited	0.02786	0.69200	0.01286	0.34500	0.06865	1.84100	0.03007	0.80600	0.05885	1.57800	0.02232	0.59800
Tata Consultancy Services Limited	0.03410	1.63900	-0.00140	-0.06700	0.00487	0.23400	-0.00712	-0.34200	0.02326	1.11800	0.02013	0.96700
Tech Mahindra Limited	0.08689	3.31600	0.00159	0.06100	0.03991	1.52300	0.03761	1.43500	0.03251	1.24100	0.00015	0.00600
Wipro Limited	0.01692	0.72100	0.00854	0.63400	0.01055	0.45000	-0.00238	-0.10100	0.04238	1.80600	-0.00006	-0.00300

Table 41: Descriptive Statistics for Utilities Sector for Monthly Returns

Company Name	Min	Max	Mean	Median	Skewness	Kurtosis	Jarque Bera	p-value
NTPC Limited	-0.2354190	0.3216910	0.0055580	-0.0024330	0.5187929	2.0782330	28.71	0.00
Power Grid Corporation of India Limited	-0.1317220	0.1499980	0.0124900	0.0096280	-0.0051181	-0.2665337	0.24	0.89

Table 42: Regression Results for Utilities Sector for Monthly Returns

Company Name	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
NTPC Limited	-0.01865	-0.76100	0.02128	0.86800	0.03397	1.31400	0.02766	1.12800	-0.00554	-0.22600	-0.02969	-1.21100
Power Grid Corporation of India Limited	-0.00486	0.25900	0.02016	1.07700	0.03424	1.73400	0.02499	1.33400	0.01916	1.02300	0.00196	0.10400
Company Name	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value	Coefficient	T-Value
NTPC Limited	0.00900	0.36700	0.01393	0.56800	0.03953	1.61200	-0.01576	-0.64300	0.01092	0.44500	-0.01710	-0.69700
Power Grid Corporation of India Limited	0.00253	0.13500	-0.01566	-0.83600	0.03103	1.65700	0.01839	0.98200	0.00203	0.10800	0.01810	0.99600

V. FINDINGS AND CONCLUSIONS

Numerous studies conducted by both Indian and international researchers have delved into the intriguing realm of stock market anomalies, with a particular emphasis on calendar anomalies prevalent in stock indices. These anomalies serve as pivotal indicators, offering insights into the intricacies of entire exchanges and their functioning, utilizing benchmarks as reference points. The current study takes a unique perspective, focusing on individual stocks to

glean a nuanced understanding of how individual investors, like the everyday trader, can leverage this knowledge to generate abnormal profits within the dynamic landscape of the Indian stock exchange.

The exploration of calendar anomalies within stock indices is a well-established field, often considered a lens through which researchers can unravel the underlying mechanisms that govern the entire exchange. By scrutinizing specific time-based patterns and irregularities, scholars seek

to uncover recurring trends and anomalies that may provide valuable insights into market behavior. Such anomalies could range from intraday patterns to monthly or even seasonal trends that impact stock prices.

The current study adopts a more granular approach by zooming in on individual stocks, seeking to discern how these anomalies can be harnessed by individual investors for strategic trading decisions. Unlike broader indices that encapsulate a multitude of stocks, the focus on individual equities allows for a more targeted analysis, shedding light on

the specific dynamics that influence the performance of individual companies.

For individual investors, the implications are profound. By understanding and exploiting these anomalies, everyday traders can potentially unlock opportunities to generate abnormal profits through strategic trading positions. Long and short positions become strategic tools in the arsenal of an informed investor, with an awareness of how specific stocks respond to calendar anomalies.

A. Day-of-the-Week effect

Table 43: Count of Statistically Significant Days for Returns

Industry Name	Monday	Tuesday	Wednesday	Thursday	Friday
Industrials		3	1		
Healthcare					2
Financials	2	5	1	1	2
Materials		1		1	
Consumer Discretionary		2			
Consumer Staples			2	2	
Communication Services					
Energy		1	1		1
Information Technology	1	1	1		
Utilities					

The above table offers a comprehensive overview of sector returns on various days, revealing Tuesday as a particularly significant day for both traders and investors. This insight prompts strategic planning opportunities for market participants, allowing them to devise effective strategies that capitalize on the observed patterns, potentially generating additional profits. Tuesdays emerge as a focal point for market activities, providing a strategic window for entering or exiting positions to maximize returns.

Beyond the prominence of Tuesdays, the table highlights the significance of other days in influencing the performances of companies within the sector. Notably, Friday stands out with five companies demonstrating noteworthy returns on that day, presenting an additional avenue for traders to leverage market dynamics. Similarly, Wednesday exhibits anomalies in the performances of six companies, offering yet another day for traders to consider in their strategic planning.

Understanding the distinctive patterns associated with each day allows traders and investors to tailor their approaches based on the observed anomalies. This strategic alignment with specific days, characterized by significant returns, enables market participants to navigate the sector more adeptly. By synchronizing their trading activities with days that exhibit anomalies, investors can enhance their potential for generating profits and optimizing their overall portfolio performance.

In essence, the table serves as a valuable tool for market participants, offering insights into the temporal dynamics of sector returns. This information empowers traders to make

informed decisions, strategically entering or exiting positions on days that historically manifest anomalies, thereby unlocking opportunities for enhanced profitability within the sector.

B. Month-of-the-Year Effect

The data presented in Table 44 underscores the heightened statistical significance observed in the month of June, with ten out of the forty-eight studied companies displaying notable statistical relevance during this period. The prominence of June can be attributed to companies strategically releasing their annual financial statements, a crucial disclosure influencing investor decision-making.

The absence of anomalies towards the end of the calendar year suggests a trend of market efficiency during this period. Typically, the conclusion of the year is marked by companies finalizing their financial disclosures and investors positioning themselves based on comprehensive year-end data. In this context, the lack of anomalies signifies a more stable and predictable market performance during the concluding months of the calendar year.

The statistical prominence of June aligns with the common practice of companies unveiling their annual financial reports during this timeframe. Investors keen on making informed decisions often await these disclosures, leading to increased market activity and notable statistical patterns. Recognizing these temporal trends provides valuable insights for investors seeking to strategically time their engagements within the market.

In summary, the data underscores the unique significance of June, driven by the release of annual financial statements by companies. Simultaneously, the absence of anomalies in the year-end period highlights a phase of market efficiency, offering investors valuable information for optimizing their decision-making strategies throughout the calendar year.

VI. FINDINGS

The study delves into calendar anomalies within the Indian stock market, focusing on individual stocks to provide insights for everyday traders. It analyzes the day-of-the-week effect, revealing Tuesday as a significant day for trading opportunities, with Friday and Wednesday also displaying noteworthy anomalies in specific sectors. This granular approach allows for targeted strategies, aligning trading activities with days that historically manifest anomalies.

In addition, the month-of-the-year effect is explored, emphasizing the statistical significance of June due to companies releasing annual financial statements. This aligns with increased market activity and investor engagement during this period. Conversely, the year-end months exhibit market efficiency, characterized by stable and predictable performance as companies finalize their financial disclosures.

The findings present a valuable tool for traders, enabling them to make informed decisions based on temporal dynamics. Recognizing the unique significance of June and understanding the absence of anomalies in year-end months empowers investors to optimize their decision-making throughout the calendar year. By strategically timing engagements based on observed patterns, traders can potentially enhance profitability and navigate the market more adeptly.

VII. CONCLUSION

In employing a dummy variable regression model, akin to the approach undertaken by Samuel O. Onyuma in 2009, the study yielded a spectrum of results. Notably, a discernible Tuesday effect was observed across a majority of companies within the index, suggesting a pronounced significance attached to this particular day among investors. Furthermore, the month of June emerged as a focal point of significance for the Nifty 50 companies, aligning with the customary period for the disclosure of annual financial statements.

This study not only offers insights into market behavior but also opens avenues for further research. One potential avenue for exploration involves expanding the analysis to encompass indices with a larger number of companies, such as the Nifty ESG 100 or Nifty 250. This expansion could provide manifold benefits, leading to a more comprehensive understanding of the intricate dynamics underlying companies listed on the National Stock Exchange of India (NSE).

By delving into indices with a broader representation of companies, the research can offer nuanced insights that extend beyond the confines of the Nifty 50. This expanded scope holds implications for various stakeholders in the financial landscape, including traders, investors, and regulators. The findings have the potential to enhance the collective understanding of market trends and facilitate more informed decision-making.

In conclusion, this study not only sheds light on the specific phenomena of the Tuesday effect and the significance of June in the Nifty 50 but also paves the way for future investigations with a broader scope. The exploration of larger indices can contribute substantially to the comprehension of market dynamics, ultimately benefiting participants across the spectrum of the NSE.

Table 44: Count of Statistically Significant Months for Returns

Industry Name	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Industrials				1					2			
Healthcare		1	1			2	1	1				
Financials	1		2			2						
Materials			2	1		1	1					
Consumer Discretionary	1			1			1		1			
Consumer Staples		1				2			1			
Communication Services												
Energy			1									
Information Technology						3						
Utilities												

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