Chapter VIII

Summary of Findings, Suggestions and Conclusion
Findings of the Study
The following are the important findings of the study:

Analysis of Day of the Week Effect

1. There were Positive Mean Returns recorded on all days of the week while the Highest Mean Returns (0.1521 for S&P CNX Nifty, 0.1701 for S&P CNX 500, 0.1619 for BSE Sensex, 0.1727 for BSE 500) were recorded on Friday, and the Lowest Mean Returns (0.0175 for S&P CNX Nifty, 0.0306 for S&P CNX 500, 0.0169 for BSE Sensex, 0.0304 for BSE 500) were recorded on Monday for all the sample indices during the whole study period. The Highest Positive Mean Returns (0.6766 for S&P CNX Nifty, 0.6942 for S&P CNX 500, 0.6660 for BSE Sensex, 0.7226 for BSE 500) were recorded on Friday in 2003-04 for all sample indices.

2. The Standard Deviation of the year wise analysis shows that the Highest Values (3.3555 for S&P CNX Nifty, 3.0632 for S&P CNX 500, 3.4583 for BSE Sensex, 3.1069 for BSE 500) were recorded on Friday in 2008-09 and the Lowest Values (0.7561 for S&P CNX Nifty, 0.6980 for S&P CNX 500, 0.7696 for BSE Sensex, 0.6930 for BSE 500) were recorded on Wednesday in 2002-03.

3. But the analysis of the whole study period reveals that the Highest Values of Standard Deviation (2.1226 for S&P CNX Nifty, 2.0981 for S&P CNX 500, 2.0891 for BSE Sensex, 2.0921 for BSE 500) were recorded on Monday and the Lowest Values of Standard Deviation (1.5213 for S&P CNX 500, 1.5495 for BSE Sensex, 1.5154 for BSE 500) were recorded on Thursday for all sample indices, except S&P CNX Nifty Index (1.5687 on Tuesday) during the study period. It clearly indicates that the market was more volatile on Monday and least volatile on Thursday during the study period.

4. In 2008-09, the Average Returns were Negative for all trading days of the week and the Indian Stock Market was more volatile, due to the impact of the U.S Financial Crisis.

5. The Kurtosis measure of Returns Distribution was Leptokurtic for all days of the week, showing the Highest Values (15.59 for S&P CNX Nifty, 14.21 for
S&P CNX 500, 14.36 for BSE Sensex, 13.06 for BSE 500) on Monday for the sample indices during the study period. It indicates that the Return Distribution was not normally distributed during the study period. According to the year wise analysis, there were mixed results. Few days were Platykurtic and majority of the days were Leptokurtic in all years during the study period.

6. The Return Distribution was Positively Skewed for Monday (0.114 for S&P CNX Nifty, 0.3654 for BSE Sensex) & Tuesday (0.1231 for S&P CNX Nifty, 0.0042 for S&P CNX 500, 0.1068 for BSE Sensex) while Negatively Skewed for remaining trading days of the week during the study period. According to the year wise analysis, the Return Distribution was Positively Skewed for few trading days of the week while on majority of the days, the return was Skewed Negatively in all years during the study period.

7. The Jarque-Bera Test found that the Return Distribution was not normally distributed for the whole study period. But the year wise analysis clearly reveals that returns of only a few days were normally distributed in all the years.

8. The analysis of Kruskall-Wallis Statistics shows that the year 2003-04 recorded significant value at 5% risk level for all sample indices. The analysis of remaining years as well as the whole study period found that there was no significant difference between the returns of different days of the week. This shows that the Day of the Week Effect did exist in the Indian Stock Market, only during 2003-04.

9. According to the analysis of Cross Correlation, there was Negative and Significant Relationship between the returns of Tuesday-Wednesday for S&P CNX Nifty index, BSE Sensex at 1% risk level and for S&P CNX 500 index and BSE 500 Index at 5% risk level during the study period.

10. The study found that there was Significant and Positive Relationship between the returns of Monday-Friday and Thursday-Friday for S&P CNX 500 Index at 1% risk level during the study period.

11. The analysis of Seasonality shows that there was significant coefficient value recorded on Monday in 2003-04 and in 2005-06, Thursday in 2006-07 for all
the sample indices, but there was Significant Coefficient Value on Monday, only during 2003-04 and their F-value confirming the Monday Anomaly in S&P CNX 500 and BSE 500 Index returns during the study period. According to the analysis of remaining years as well as the whole study period, none of the coefficients was significant at 5% risk level. Therefore, it is inferred that the 2003-04 documents the Statistically Significant Monday Effect in S&P CNX 500 and BSE 500 Index Returns during the study period.

**Analysis of the Monthly Effect**

12. The analysis of Monthly Effect reveals that during the whole study period, the Highest Mean Returns (0.2900 for S&P CNX Nifty, 0.2718 for BSE Sensex, 0.3454 for BSE 500) were recorded in December and the Lowest / Negative Mean Returns (-0.1711 for S&P CNX Nifty, -0.1863 for S&P CNX 500, -0.1349 for BSE Sensex, -0.1824 for BSE 500) were recorded in January for all the sample indices, except S&P CNX 500.

13. The year wise analysis shows that the Highest Mean Returns (1.2369 for S&P CNX Nifty, 1.4795 for S&P CNX 500, 1.2443 for BSE Sensex, 1.4381 for BSE 500) were recorded in May 2009-10 and the Lowest/ High Negative Mean Returns (-1.5333 for S&P CNX Nifty, -1.5894 for S&P CNX 500, -1.3650 for BSE Sensex, -1.5808 for BSE 500) were recorded in October 2008-09 because of the impact of US the Financial Crisis.

14. For the month of January, followed by February, March and October, Negative Returns were registered for all sample indices, except S&P CNX 500 Index Returns for a few years during the whole study period. This indicates that the present study supports the Tax Loss Selling Hypothesis.

15. During the whole study period, the S&P CNX 500 Index Return recorded the Highest Mean Return (0.9910), Standard Deviation (12.9517), Kurtosis (159.67) and High & Positive Skewness (12.4896) in the month of March compared to other months and other sample indices. It indicates that in the month of March, the market was highly fluctuating and the return was not normally distributed.
16. The Standard Deviations of the return series were highest (2.4760 for S&P CNX Nifty, 2.3808 for BSE Sensex, 2.3982 for BSE 500) in the month of May and lowest (1.3188 for S&P CNX 500, 1.3443 for BSE Sensex, 1.2945 for BSE 500) in the month of December for all the sample indices, except in S&P CNX 500 Index. It indicates that the Stock Market suffered high fluctuation in the month of May and the least variation in December during the study period. But the year wise analysis discloses that the Highest Standard Deviation (5.0348 for S&P CNX Nifty, 4.6683 for S&P CNX 500, 5.1916 for BSE Sensex, 4.8184 for BSE 500) were recorded in the month of October 2008-09 for all the sample indices. It indicates the fact that the Stock Market was highly volatile in the month of October during the study period.

17. The study found that there was non-linearity between the risk and return for all the sample index returns, except for S&P CNX 500 Index, during the study period. In other words, High Return was associated with Low Risk and vice versa.

18. The month wise return distribution was Positively Skewed in the month of May and Negatively Skewed for the remaining months for all the indices like S&P CNX Nifty index, S&P CNX Nifty, BSE Sensex and BSE 500 Index. The Peak of the Month wise Return distribution was Leptokurtic for all the months of the year and the Highest Value was recorded in the month of May. But the year wise analysis showed mixed results.

19. The analysis of Kruskall-Wallis Test Statistic was significant for S&P CNX 500 and BSE 500 index at 5% level of significance. It means that the differences in the mean returns across the months were Statistically Significant for the whole study period. But the year wise analysis shows that only in 2002-03, the S&P CNX Nifty index returns was significant at 5% risk level. This provides evidence to the Presence of Regularity in Common Stock Returns in India.

20. The results of the Cross Correlation indicate that there was Significant and Strong Positive Relationship between the returns of February-October, February-December, July-October and September-November and Significantly
Negative Relationship between the returns of June-July for the sample indices during the study period.

21. The Results of the year wise Seasonal Analysis reveal that the year 2002-03 confirmed November Anomalies in S&P CNX Nifty Index returns, while 2005-06 confirmed Negative October Anomaly for all the sample indices. It is to be noted that the majority of the years recorded Significant Coefficient Value and also the months of April, August, November and December. This did not confirm the Seasonalities during the study period.

22. According to the analysis of the whole study period, the Coefficient Value in November and December were significant for all indices. However, the insignificant F-value indicates that November and December Anomalies were not confirmed during the study period.

Analysis of Semi-Month and Turn of the Month Effect

23. The Analysis of Semi-Month and Turn of the Month indicates that the Highest Mean Return in the First Half of the Month were higher than the Rest of the Days of the Month for the sample indices in the Indian Stock Market and the Highest Mean Returns (0.3590 for S&P CNX Nifty, 0.4546 for S&P CNX 500, 0.3484 for BSE Sensex, 0.4538 for BSE 500) were recorded in the First Half Month in 2003-04 during the study period. This was due to the fact that the Corporates would have announced Positive Information during the First Half of the Month period.

24. Higher Value of the Standard Deviation was recorded in the Second Half of Month than the First Half of Month during the study period. It is to be noted that the Highest Values of Standard Deviation (2.7416 for S&P CNX Nifty, 2.5511 for S&P CNX 500, 2.8188 for BSE Sensex, 2.5509 for BSE 500) were recorded in 2008-09 and it indicates that the Second Half of the Month Returns were Highly Volatile for all the sample indices of Indian Stock Market.

25. The peak of the Semi-Month and Turn of the Month Returns series were Leptokurtic in both the returns. It indicates that the returns were not normally distributed. According to the year wise analysis, the values of returns were
negative for a few years and distributed Platykurtic for all years, except 2004-05 and second half of 2009-10.

26. The Linear Regression Values for the First Half Semi-Month Returns were significant at 1% risk in 2003-04 and 5% in 2005-06. According to the year wise analysis, it was significant at 5% for S&P CNX500 in 2009-10. During the whole study period, the Linear Regression Values for S&P CNX Nifty and BSE Sensex were significant at 5% level but in the case of S&P CNX500 and BSE 500 Index, the value was significant at 1% risk level. But insignificant F-Value did not confirm the Semi-Month Effect in all the sample indices. This confirms that the Semi-Month Effect did not exist in the Indian Stock Market during the study period.

27. The Second Half Month Returns were negatively significant at 5% risk level for all the sample indices in 2002-03. It is found that the Second Half Month Returns were significantly lower than the First-Half Month during the study period.

28. According to the analysis of Turn of the Month Effect (the year wise analysis), the returns were significant at 1% & 5% in First and Second Half in 2003-04, 5% in 2004-05, 1% in First Half of 2005-06 and 5% in First Half 2009-10. But in 2003-04, 2004-05 and for the whole study period, the Significant F-Values confirmed the Turn of the Month Anomaly. This indicates that the Turn of the Month Effect did exist in returns of the Indian Stock Market during the study period.

**Analysis of the Holiday Effect**

29. The average Pre-Holidays Return was significantly higher (0.2040 for S&P CNX Nifty, 0.2163 for S&P CNX 500, 0.2137 for BSE Sensex, 0.2215 for BSE 500) than the mean returns of Other Days (Post-Holidays and Weekdays) for the sample indices during the study period.

30. The Standard Deviation of Pre-Holiday Return was lower (1.7722 for S&P CNX Nifty, 1.6931 for S&P CNX 500, 1.7491 for BSE Sensex, 1.6984 for BSE 500) than Post-Holidays. Thus Higher Returns were accompanied by Lower
Risks for Pre-Holidays but the Lower Returns by Higher Risks for the Post-Holidays. It indicates that there was Non-Linearity between the Pre-Holiday Returns during the study period.

31. The Linear Regression Analysis of the Holiday Returns indicates that there was significant difference between the Pre-Holidays Returns. But the F-Value was not significant at 5% risk level and hence the Holiday Effect did not exist for all the sample indices during the study period.

Analysis of Stationarity and Volatility of Indian Stock Market

32. The analysis of the Stationarity Test indicates that the Daily Index Returns and Month Wise Daily Returns were stationary at 1% significant in Level Difference. The Test Statistic Values were satisfied at Level itself. The Phillips-Perron Test Statistic Values were more negative than the Test Critical Values and hence the daily returns were stationary in the Indian Stock Market.

33. The volatility of the Day of the Week Effect reveals that the daily returns on Monday was significant at 1% risk level, both in mean and variance equation for all selected sample indices. But in the variance equation, Tuesday was significant in S&P CNX Nifty and BSE Sensex while the values of Tuesday, Thursday and Friday were significant in S&P CNX 500 and BSE 500 index. The insignificant variables under mean equation but significant variables under the variance equation, confirm that there was Calendar Effect due to market risk.

34. Month wise daily returns reveal that the returns on November and December were significant under the mean equation but none of the variables was significant under the variance equation for all the sample indices during the study period. It is found that these two month returns were True Anomalies during the study period after taking into account the Time Varying Volatility.
Suggestions of the study

The following are some of the important suggestions of the study:

1. It is necessary for the Indian Investors to carefully study the publically available information, because it plays a major role in analyzing the Market Efficiency and changes in the market.

2. The present study would be useful to the native and foreign investors, traders and arbitrageurs who formulate profitable trading strategies in the stock market.

3. From the analyses of the Day of the Week, it is suggested that investors may buy the shares on Monday and sell them on Friday because they may get better returns than on other days.

4. The analysis of Monthly Effect found that there were Highest Mean Returns in the month of December, followed by November for all the sample indices. Hence logically speaking, if the investors want to sell their holdings, these two months (November and December) could be considered as the best period. The shares may be bought in the month of January which is the best period to buy the shares.

5. The study found that the Highest Mean Returns were recorded in the First Half Month Return in the Semi-Month and Turn of the Month Effect Analysis of sample indices. Hence Indian investors are advised to preferably invest in the First Half Month period because it will give better returns than the rest of the days of the month.

6. The study may serve as a guide to the investors, both individual and institutional. The simple trading strategy, based on the results, would be for the investors to sell the stocks on Pre-Holiday and to delay the purchase plan on Pre-Holidays.

7. The regular identification of Seasonal Patterns in stock markets may help the investors to form appropriate trading strategies in the Stock Market. The study recommends that the investors may buy and sell the stocks using the best strategy. However, the Equity Investors always look for Higher Returns by
accepting the Higher Risk Status. In order to minimize the risk, necessary steps should be taken.

8. The study found that there was no uniformity in the returns of different trading days and months of the year during the study period. It is to be noted that some months considered for this study witnessed High Negative Returns and some months recorded High Positive Returns. Therefore the Market Regulator may take appropriate steps to stabilize the market for the benefits of long term and small investors.

9. The existence of Turn-of-the Month Anomalies in Indian Stock Markets is against the theory of Market Efficiency, which is an alarming situation. The policy makers may make appropriate arrangements to control this anomalous behavior of market to protect the interest of investors.

10. The study found that the Mean Returns in early days of a month were higher than other days of the month. Therefore it is suggested that the Salaried People, who get their salary at the end of the month, may invest the same in the early days of next month. It may give good returns to the Salaried Group of Investors.

11. The Market Regulators should closely observe the investors’ response regarding information transmission and its reliability or the trustworthiness of the information released by the Indian Companies.

12. The Month of October, recorded High Risk with Negative Returns for all sample indices and hence Regulators may study the market situation and control the same. While investor may also carefully take the investment decisions.

13. The study found that there was non-linearity between the risk and return (Low/Negative Returns with High Risk) for all the sample indices. Hence the Regulators may take necessary steps to reduce it.

14. It is to be noted that compared with Developed Countries, Research in the area of Capital Market in general and on Seasonal Anomalies and investment management in particular is limited in India. Therefore, all possible steps may be taken to increase research in the area of capital market.
15. The analysis of the S&P CNX 500 returns reveals Highest Mean Return in the Month of March. Therefore, the investors may invest in S&P CNX 500 listed companies in March in order to get good returns.

16. The result of the study implies that the Stock Market in India is not developed on par with Advanced Countries and hence the investors may carefully time their share investment to improve returns.

Conclusion

The present study investigated the existence of a daily pattern of Seasonality (Calendar Anomalies) Effect on Index Returns for BSE and NSE Indices. The study analyzed the Calendar Anomaly in BSE Sensex, BSE 500, S&P CNX Nifty and S&P CNX 500 Index returns for the study period (Post Rolling Settlement Period). The study found that after the Introduction of Compulsory Rolling Settlement, there were Positive Mean Returns recorded for all days of the week and Highest Mean Return was recorded on Friday, and Lowest Mean Return recorded on Monday for all the sample indices. The OLS Results indicate Statistically Significant Monday Effect in S&P CNX 500 and BSE 500 Index Returns in 2003-04. The Monthly Analysis found that the Highest Mean Returns were recorded in December and the Lowest / Negative Mean Returns recorded in January in all years as well as the whole study period. The result of the Seasonal Analysis reveals that year 2002-03 confirmed November Anomalies in S&P CNX Nifty Index Returns. However, during the whole study period, November and December Anomalies were not confirmed during the study period.

The insignificant Semi-Month & Holiday Effect and Significant Turn-Of-The Month Effect did exist in Indian Stock Market during the study period. The study also concludes that the daily and month wise daily index returns were Stationary in the Indian Stock Market. The GARCH Models indicate that they were due to the Varying Market Volatility. The insignificant variables under mean equation but significant variables under the variance equation, established the Calendar Effect being due to Market Risk. It is believed that the Empirical Results detecting significant and different daily patterns of mean returns and volatility in Stock Market terms have useful implications for trading strategies and investment decisions. The returns in the Stock Market are not independent across different trading days of the Week, Month etc. The
study also provides evidence that the market was not able to price the risk appropriately as Higher Returns were possible by taking Less Risk and this indicates Market Inefficiency. The findings of this study would possibly help in understanding and explaining such seasonality for the Indian stock markets. These findings have important implications for Financial Managers, Financial Analysts and Investors. The understanding of Seasonality should help them to develop appropriate investment strategies.