CHAPTER-1

INTRODUCTION

The concept of stock market efficiency acts as a central paradigm in explaining the behaviour of share prices which are governed by rational, emotional, economic, geographical and psychological factors. Predicting the behavior of stock market is considered one of the most challenging tasks performed by the researchers and securities analysts the world over. Even so, for decades, investors whether individual or institutional, have always been interested in finding an answer to the question of how securities are priced (Ziemba and Hensel 1994). However, it is believed that when a security price and its value vibrate randomly together, an equilibrium exists in such a manner that they are continuously equal with the passage of time.

In fact, the term market efficiency is used to explain the relationship between information and share prices in the capital market literature as it is perhaps the most important concept especially in terms of understanding of the working of capital markets. It assumes greater importance as the trend of investments is accelerating in these markets both as a result of regulatory reforms and removal of other barriers from the international equity investments. This term is used to depict the ability of the stock market to process information with respect to speed and quality. As a result, it is the speed of this price adjustment process which reveals exactly how efficient a market is.

By virtue of this, such efficiency would result in a price that is appropriate in terms of current knowledge. This hypothesis has also occupied significant proportion of research since the 1970s. In fact, the share prices appear to follow a random walk and it is of much interest to either prove it or to disprove it. For this purpose, a model of share price behaviour was required to explain the random walk and this gap was filled by a more general model based on the concept of efficiency of the markets in which shares are traded i.e., the Efficient Market Hypothesis (EMH) (Fama 1965). The EMH assumes that security prices fully reflect all available information at any given point of time which implies that price movements do not follow any pattern or trends. It further assumes that
an efficient stock market must ensure rapid information access, so that it can instantaneously process the information to reflect into security prices.

For considering informational efficiency of a market, it is must that the availability of reliable and accurate information, equal opportunities for trade to all market participants and operationally efficient markets are necessary pre-requisites. In addition, reliable and full material information which has a bearing on either the present or prospective working of a firm at the company, industry and economy levels has to be generated. At the same time, all the market participants cannot be expected to independently gather information on their own due to various reasons such as high costs involved, distance of companies, lack of necessary skills to collect, process and analyse such information.

Typically, information about daily functioning of a firm is not made available to others easily who are not involved in the management of that firm mainly because of strategic reasons and to a lesser extent, due to the huge costs associated with such a process (Avadhani 1992). Therefore, the companies are obliged to generate, gather and frequently disseminate information at regular intervals. Even in India, the information generated and supplied at the company level is inadequate and fails to give the true picture of company’s performance and future prospects. In fact, information is not supplied at frequent intervals and as a result, there exist no channels for quick and simultaneous dissemination of policy changes and other material information.

1.1 EFFICIENT MARKET HYPOTHESIS (EMH)

The guiding principle that asset markets are efficient and stock prices can be described by a random walk is simply stated, but its implications are many and subtle. The EMH theory is propounded by a distinguished statistician M. Kendall in 1953 (Ziemba and Hensel 1994) and has been documented by a number of statisticians later on (Working 1960; Alexander 1961; Fama 1965; Samuelson 1965; Fama 1970; Dimson and Mussavian 1998; Lee 2001). In fact, Kendall has been looking for regular price cycles,
but according to him, there exists no pattern in the movement of share prices and documented that the change in the prices is a random event.

Contrary to most preceding research, Malkiel (2003) provides an explicit definition of the EMH: “A capital market is said to be efficient, if it accurately reflects all relevant information up to the full extent to determine security prices. Formally, the market is said to be efficient with respect to some information set, if security prices would be unaffected by revealing that information to all participants. Moreover, efficiency with respect to an information set implies that it is impossible to make economic profits by trading on the basis of that information set”.

The EMH is simple in principle, but remains elusive. Evolving from an initially puzzling set of observations about the random character of security prices, it has become the dominant paradigm in finance during 1970s. During its heyday, the EMH came to be supported by a growing body of empirical research demonstrating the difficulty of beating the market, whether by analysis whose information is publicly available or by employing professional investment advisors (Dimson and Mussavian 1998).

The debate about efficient markets has resulted in hundreds of empirical studies attempting to determine whether specific markets are in fact efficient and their level of efficiency. Even, certain regularities in the prices of the common stocks have been discovered and some cross-sectional differences among stock returns have been found to occur with regularity (Bohl et al. 2006). To support this, a well-established pricing model i.e. Capital Asset Pricing Model (CAPM) explains a few regularities as this model asserts that different securities should have different trading returns because they have different betas. But a number of irregularities known as Anomalies have not been explained by any of the traditional asset pricing models (Ho et al. 2000; Hahn et al. 2004;

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1 The general idea behind CAPM is that investors need to be compensated in two ways: time value of money and risk. The time value of money is represented by the risk-free ($r_f$) rate in the formula and compensates the investors for placing money in any investment over a period of time. The other half of the formula represents risk and calculates the amount of compensation the investor needs for taking on additional risk. This is calculated by taking a risk measure (beta) that compares the returns of the asset to the market over a period of time and to the market premium ($r_m - r_f$) (Source: Notes on CAPM from www.wikipedia.com).
Marquering et al. 2006). Anomalies are the empirical results that seem to be inconsistent with established theories of asset-pricing behavior and indicate some market inefficiency (Schwert 2003).

Thus, it can be said that the ability of investor to pick winner stocks and make excess returns by using new information is directly related to the speed and efficiency of a market. So, efficiency is considered in terms of the fair game concept. Even a market is regarded as efficient with respect to a particular set of information if investors using that information are faced with fair game, that is, they receive on average the return expected for the risk involved and make no consistent abnormal returns.

As stated earlier, the EMH is related to the random walk theory as the random walk is used to refer to successive price changes, which are independent of each other. In other words, tomorrow’s price change (and therefore, tomorrow’s price) cannot be predicted by looking at today’s price change i.e., \( P_{t+1} - P_t \) is independent of \( P_t - P_{t-1} \).

Furthermore, the EMH is in essence an extension of the zero profit competitive equilibrium condition from the certainty world of classical price theory to the dynamic behaviour of prices in speculative markets under conditions of certainty i.e., a market is efficient with respect to information set \( \theta_t \), if it impossible to make economic profits by trading on the basis of information set \( \theta_t \) (Cited in Jensen 1978).

As explained by Fama (1970), there are three broad categories of EMH (Alt et al. 2002):

1. **Weak Form:** The market is said to be efficient in weak form, if current market prices reflect all the information contained in the past price movements which is contrary to technical analysis that forecast future prices based on past data. Technical analysts claim that history repeats itself whereas, weak-form of EMH states that market has no memory. As a result, market participants cannot forecast future prices in order to buy/sell securities to earn more than what is earned under a policy of buy and hold securities on the basis of past prices of stocks.
(2) **Semi-Strong Form:** The market is considered to be efficient in semi-strong form, when current prices reflect not only the past prices, but also all publicly available information. This implies that market participants cannot make superior decisions on the basis of published information to earn more trading returns than what is earned under a policy of buy and hold securities. This form represents the accepted paradigm and report what is generally meant by unqualified references in the literature to the EMH. Of course, the precise meaning of publicly available must be defined to give the hypothesis content (Jensen 1978).

(3) **Strong Form:** This form of market efficiency contains not only all published and known information, but also all significant information including information not yet published, drives even insider traders towards above average profits.

Thus, empirically EMH’s implication can be:

1. Prices should react quickly and accurately to new arriving information into the stock market;
2. Price changes should be random and unpredictable (prices follow a random walk);
3. It is impossible to find profitable trading strategies on risk-adjusted basis;
4. Knowledgeable investors do not perform better than average investors.

In addition, EMH has been supported by a number of researchers (Kendall 1953; Working 1960; Fama 1991; Poshakwale 1996; Dimson and Mussavian 1998; Lee 2001; Buguk and Brorsen 2003). A few researchers support the weak form of EMH (Basu 1977; Abeysekera 2001), while others contradict their existence (Buguk and Brorsen 2003; Malkiel 2003). As regards the strong form of EMH, evidence casts a serious doubt upon its existence in the real world situation (Thaler 1987; Rabin and Thaler 2001; Zhang 2005).

1.2 **STOCK MARKET ANOMALIES**

In the context of security markets, EMH explains how the share prices should behave in an efficient market. As EMH states that in an active market which consists of a
large number of well-informed and objective investors, stocks will be appropriately priced by reflecting all available information. If so, no one can beat the market except by taking a higher risk.

In recent years, the testing for market anomalies in stock return has become an active field of research in empirical financial management and has been receiving attention globally (Franses and Paap 2000; Tong 2000; Loughani and Chappell 2001; Pandey 2002a; Rossy 2007). Over the last 25 years or so, one of the most puzzling and consequently investigated areas of financial market research is the presence and documentation of security price anomalies.

Anomaly means deviation from the established principle or a situation or that, which is different from what is normally expected. They are the patterns in prices that are not in accordance with theoretical expectations and anomalies in stock returns are in various forms i.e. large firms versus small firms trading returns, long-term versus short-term trading returns, over and under reactions of the firms to information, seasonal effects of trading returns and so on. The conventional wisdom is that knowledgeable traders should eliminate them. Yet, market anomalies are frequently reported in the empirical finance and economic literature. Therefore, these potential departures from the EMH must be rigorously analyzed and tested. This understanding, in turn, provides an insight towards an explanation of the anomaly (Keef and Roush 2005).

Ritter and Chopra (1989) and Cadsby (1992) have argued that higher equity returns are present in the anomalous period and is rewarded precisely due to higher risk element present therein. Under normal circumstances, the seasonality implies that stock markets are not informationally efficient (Pandey 2002) which opens the opportunities for financial participants possibly to formulate effective trading strategies to exploit the situation (Yakob et al. 2005). In fact, seasonal anomalies in stock returns have indicated

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2 Globally, evidence of seasonal anomalies in stock market returns has generated considerable interest among the general public in recent years and a significant amount of research has been devoted towards documenting the existence and potential of an anomaly for generating superior risk-adjusted returns (Pham 2005).
that investors can have different required rates of return on risky assets depending on the Calendar month or day, on which investments occurs.

The violation of EMH gives the opportunities to arbitrageurs to earn abnormal returns (Kilby 1993) and if these are considered, then the general rule of trading buy small stocks that have decreased in prices in the period and sell them when the prices are higher could provide best chances for winning abnormal profits. Even investors are in the touch of such opportunities in the market. Such irregularities exist in the market and raise the question whether EMH is sufficiently correct description of financial markets.

According to Ziemb and Hensel (1994), there are some basic reasons for which anomalies seem to yield higher short-term equity returns. These reasons might be:

(i) Behavioral considerations such as investor’s sentiments leading to excess purchase or sale of equities in related but different securities;
(ii) Slow response of the market to the new information;
(iii) Increased cash flow just prior to and during the anomalous period;
(iv) Delay in reporting bad news;
(v) Institutional constraints and policies such as pension funds made on last day of the month; and
(vi) Market maker supply-demand balances and bid-ask spread preferences.

The present research concentrates on the selected anomalies related to EMH in the Indian context. In recent years, several anomalies have been identified (Bhattacharya et al. 2003; Holden et al. 2005). Most commonly discussed Calendar anomalies are given below:

- Day-of-the-Week effect (Kato 1990; Chaudhary 1991; Chang et al. 1993; Draper and Paudyal 2002; Boynton et al. 2006);
- January effect (Rozeff and Kinney 1976; Ariel 1987; Clark et al. 1992; Brooks and Persand 2001; Saad and Moosa 2005; Marquering et al. 2006);
- Turn-of-the-Year effect (Dyl and Maberly 1986; Ritter and Chopra 1989);
Turn-of-the-Month effect (Bhattacharya et al. 1995; Karmakar and Chakraborty 2000);
Monthly effect (Lucey and Whelan 2004)

However, as already documented, there are many evidences to suggest that seasonality has been documented in many of the world's stock markets, both developed and emerging. Since the seminal work of Fama (1965), the Calendar effects are one of the most extensively investigated subjects in the finance literature. In addition to the existence of such anomalies, their persistent presence for such a long time since their first discovery is a puzzling phenomenon for many academicians and practitioners. Even though a vast amount of empirical evidence for the Calendar effects is produced, there is still some scepticism regarding the reality of that phenomenon as expressed. Recently, it is suggested that the explanation for the Calendar effects could be behavioural. As a result, anomalies often seem to disappear, reverse or attenuate, after they are documented and analyzed in the academic literature (Steeley 2001; Rosenberg 2004).

1.3 TYPES OF STOCK MARKET ANOMALIES

As stated earlier, efficiency in capital markets requires that there are no predictable patterns in security returns that investors might use to make abnormal profits. Because, there is no asset pricing model to predict the returns in the seasonal pattern i.e., anomalies and due to a number of reasons, these anomalies do not lead to a complete rejection of market efficiency (Gu 2003; Bohl et al. 2005). Even as the bid-ask spreads could be higher than the potential profit opportunities and as a result; these anomalies may not be exploitable to make a profit in the real world situation (Gu and Simon 2003). Instead, it poses a question on the validity of asset pricing models too.

By virtue of this, the existence of Calendar anomalies is a contradiction to the weak form of the EMH. The weak form of the EMH states that the market is efficient in past price and volume information and stock movements cannot be predicted using this
historic information as this form infers that stock returns are time invariant, that is, there is no identifiable short-term time based pattern. The existence of seasonality in domestic and international markets suggests market inefficiency, so that investors should be able to earn abnormal rates of return incommensurate with the degree of risk.

Figure 1.1 demonstrates various types of anomalies discovered and discussed in financial literature:

### Figure 1.1: STOCK MARKET ANOMALIES

#### Calendar based Anomalies
- Day-of-the-Week effect
- End-of-the-Day-effect
- Holiday effect
- Intra-Day effect
- January effect
- Monday/Week-End effect
- Monthly/Turn-of-the-Month effect
- Tax-Year effect
- Week-of-the-Month effect

#### Announcement based Anomalies
- Earning-Surprise effect
- Information Releasing Hypothesis
- IPO’s, Seasonal Equity Offerings and Buy-Backs
- Pay-Out effect
- P/E Ratio effect

#### Other Anomalies
- Book-to-Market effect
- Low-Beta-Firm effect
- Low Price Stock effect
- Momentum effect
- Reversion to the Mean effect
- SEO Underperformance effect
- Size effect
- Weather effect

As a result, the EMH and most of the CAPMs are based on the idea that individuals act rationally and consider all available information in their decision-making process. Recently, evidences in the human behavioral psychology indicate that the tendency to find patterns may be a natural framework for human beings while observing any phenomenon.
1.3.1 Calendar Anomalies

The EMH states that the distribution of daily, monthly and yearly returns should exhibit a uniform pattern across all the weekdays, months and years (Cowles 1933; Dimson and Mussavian 1998). But, a number of empirical studies document some significant variations in the distribution patterns of stock returns over a period of time i.e., weeks, months or years. These variations are known as Calendar anomalies (Siegel and Thaler 1977; Brown and Barry 1984) which help in devising trading strategies to earn an abnormal return in the security market (Greenstone and Oyer 2000; Rabin and Thaler 2001; Du 2003; Lucey and Pardo 2005). The most prevailing Calendar anomalies in stock market are Day-of-the-Week effect, January effect, Turn-of-the-Year effect, Tax-Year effect, Monthly effect, Turn-of-the-Month effect and Holiday effect.

1.3.1.1 Day-of-the-Week effect

According to EMH, expected daily returns on stocks are same for all trading days of the week which indicates that the expected return on a security is same for Monday as it is for Tuesday, as it is for Wednesday and so on. Thus, it can be said that trading returns on a stock over different trading days of the week should be evenly distributed. However, a number of studies have provided the evidences that refute this belief known as Day-of-the-Week effect. The effect has been first documented by Osborne (1962) and subsequently analyzed by Cross (1973), French (1980), Gibbons and Hess (1981), Lakonishok and Levi (1982), Keim and Stambaugh (1983), Rogalski (1984), Jaffé and Wasterfield (1985), Smirlock and Starks (1986), Dickinson and Peterson (1995), Lian and Chen (2000), Bayar and Kan (2002), Lian and Chen (2004), Apolinario et al. (2006), Kenourgios and Samitas (2008) and Singhal and Bahure (2009) who have provided the empirical results for the presence of different trading returns on different trading days of the week.

1.3.1.2 End-of-the-Day effect

Trading volumes and share prices tend to depict an increasing trend during the last fifteen minutes of the trading day (Guin 2005). It is also referred to as Hour-of-the-Day effect.
1.3.1.3 Holiday effect

Holidays are those trading days which directly precede a day where the market is closed, but would normally be open for trading (Fields 1934; Merrill 1966). This anomaly states that trading returns tend to be higher on the trading day before a holiday (Merrill 1966; French 1980; Pettengill 1989; Liano et al. 1992; Tong 1992; Kim and Park 1994; Brockman and Michayluk 1998; Pardo 2004). Empirical works document that stock returns on trading days immediately before a holiday are nine to fourteen times higher than average daily returns. The average daily returns are the deviation of closing price of two days before the holiday to the opening price on the day after the holiday (French 1980).

As Post-Holiday trading returns are generally positive, the firms use to release bad news on holiday, so that they can enjoy the positive trading returns on Post-Holidays. This effect could be attributed to imperfections of the stock market such as higher transaction costs, taxes and psychology of the Indian investors.

1.3.1.4 Intra-Day effect

Prices rise sharply during first-forty five minutes and returns are high near the end of the day particularly on last trade of the day is known as Intra-Day effect. In addition, the day-end price changes are the highest, when the final transaction is within last five minutes of trading (Thaler 1987). The role of private and asymmetric information in the price formation process can be taken as a cause responsible for Intra-Day effect (Anderson et al. 2000).

1.3.1.5 January effect

It is not obvious to expect the stock returns to be higher in certain months in the years (Dyl 1977; Brown et al. 1983; Givoly and Ovadia 1983; Reinganum 1983).

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3 Ariel (1990) has detected Pre-Holiday effect in several organised stock markets. Liano et al. (1992) find evidence of a Pre-Holiday effect in several over-the-counter stock markets. Pettengill (1989) provides some evidence of abnormal returns on Pre-Holidays in both large and small firms grouped into portfolios and Kim and Park (1994) as well as Brockman and Michayluk (1998) have observed the same pattern in markets with different trading systems.
January effect has been contributed by Wachtel first of all (1942). It states that stocks in general and small stocks in particular have historically generated abnormally high returns during the month of January (Odgen 1990; Tong 1992; Griffiths and White 1993). That’s why it is considered that January is the best month to make the investment in stocks and at times referred to as Turn-of-the-Year effect (Pandey 2002; Chen and Singal 2004).

1.3.1.6 Monday/ Week-End effect

Monday tends to be the worst day to make an investment in the stock because it has been observed that the average trading returns on Monday tend to be much lower than the average trading return on other trading days of the week (Lawrence 1986; Chaudhury 1991; Chang et al. 1993; Poshakwale 1996; Gupta and Aggarwal 2004). However, Monday effect in trading returns might enable investors to take advantage of relatively regular shifts in the market by designing trading strategies which accounts for such predictable patterns (Kiyimaz and Berument 2003).

1.3.1.7 Monthly Effect/Turn-of-the-Month effect

According to Lakonishok and Smidt (1988), the trading days are partitioned into two sets to capture the effect. The first set consists of the first fifteen trading days and the other set contains the last fifteen trading days for each month and it is empirically proved that the average trading returns in the first half are greater than the trading returns in the second half. The average trading returns for stocks are positive for days immediately before and during the first half of the Calendar month (Ziemba and Hensel 1994; Boudreaux 1995; Dickinson and Peterson 1995) is known as Monthy effect whereas Turn-of-the-Month effect states that stocks consistently exhibit higher trading returns on the last day and first four days of the month (Odgen 1990; Cadsby and Ratner 1992).
1.3.1.8 Tax-Year effect

The prices tend to rise as the selling pressure disappears at the end of the tax year and the investors tend to buy back those securities (Brown et al. 1983; Ogden 1990). This, in turn, encourages the investor’s portfolio decisions by motivating them for sale of declining securities. Thus, as a result, resultant short-term capital losses could be offset against taxable income. It further indicates that selling pressure before the expiry of tax year might depress prices of securities. In the US, the tax year coincides with Calendar year but the situation is different in India, as the tax-year commences on April 1st and ends on March 31st. It is most evident in the securities which have experienced recent price declines.

1.3.1.9 Week-of-the-Month effect

Week-of-the-Month effect states that firms usually have higher trading returns during the first week of the month as compared to the trading returns of last three weeks of the month. Here, weeks are constructed such that first trading of the month defines the first trading day of the first week. In this way, if the first trading day is Wednesday, then the first week consists of three days (a Wednesday, a Thursday and a Friday). Thus, last Week-of-the-Month is defined in the same way and will often have fewer days than five days.

1.3.2 Announcement Based Anomalies

Announcement based anomalies create higher trading returns after the announcement is made at the corporate level. The good announcement will put the stock market under positive and favourable moves whereas negative announcement will push the market into downstream. In other words, the trading returns will be maximum if the corporate announcement is the good one and visa-versa. These are to be explained as:

1.3.2.1 Earnings Surprise effect

Stocks which report earnings considerably different from the consensus earnings forecasts tend to move by exceptional amounts and this price movement continues to
remain on high scale for several weeks after the announcement is made. This implies that an investor can still make profits from such information that has been made known to the public (Guin 2005).

1.3.2.2 Information Releasing effect

EMH states that the ability of investor to pick up winners and make excess returns on the basis of new information is directly related to the speed and efficiency of a market to absorb that particular information. This phenomenon exhibits a significant decrease in trading volume before a scheduled announcement and when the announcement is made, the corporate information is released and the information asymmetry is resolved. This ultimately results in an increase in trading volume (Wilandh and Johansson 2005).

1.3.2.3 Initial Public Offerings (IPOs), Seasoned Equity Offerings and Stock Buybacks

Numerous studies have concluded that IPOs in aggregate underperform the market. This evidence seems to confirm the theory that managers tend to have inside information regarding the value of their company’s stock. On the basis of value of company’s stock, they take their decision whether to issue or buy back their stocks. This may signal over or under valuation of stock. The practical implication of this effect seems to be that investors may do better buying stocks of firms that is they repurchase their own stock rather than from firms that are selling or issuing more of their own stock.

1.3.2.4 The Pay-Out effect

When firms tender their stocks or announce share repurchases or dividend initiations they earn positive long-term abnormal returns and the magnitude of the abnormal returns is stronger in value firms than in growth firms.

1.3.2.5 Price Earnings (P/E) Ratio effect

This anomaly states that the low P/E portfolios experience superior trading returns than high P/E portfolios. Moreover, the prices of securities are biased and the P/E ratio is
an indicator of this bias. Because of this reason, the low P/E stocks tend to outperform the high P/E stocks.

1.3.3 Other Anomalies

These are some other types of anomalies, which cannot be put under one common heading. These can be explained as:

1.3.3.1 Book-to-Market effect

This anomaly states that on an average, the stocks with high Book-to-Market ratios outperform stocks with low Book-to-Market ratios over a given period of time. Here, Book-to-Market effect indicates the value of the share according to books of accounts divided by market value of the share.

1.3.3.2 Low Beta Firm effect

Beta refers to that part of the total risk of a security that cannot be diversified. It measures the responsiveness of a security to the market in the terms of stock prices. Low beta firm anomaly states that the low beta stocks tend to outperform high beta stocks on an average over the time on risk-adjusted basis.

1.3.3.3 Low-Prices-Stocks effect

Stocks that have a low price tend to perform better than the stocks with high price underlying the basic assumption that earnings decrease while sale remains constant. A decrease in earnings is not as bad as a decrease in sales. If the sales hold up, the management can eventually solve the earnings problem causing the stock price to rise. If both sales and the price drop, an investor should avoid that stock to deal with (Guin 2005).

1.3.3.4 Momentum effect

Momentum effect states that the stocks that have out-performed the market at a particular time usually continue the same trend for an intermediate period of time i.e., for
three to five years on average. It also considers that recent past winner stocks tend to use the portfolios formed on the basis of past returns and as a result, they outperform in the market (Schwert 2003). But, this strategy doesn’t hold well every time. That’s the reason it is called Momentum effect.

1.3.3.5 Reversion to the Mean Effect

Stock prices tend to reverse over long cycles of time which means that the biggest loser stocks over the past three to five years tend to be the biggest gainer stocks over the next three to five years on average and stocks that outperformed one month tend to under-perform the next month and vice-versa (DeBondt and Thaler 1985; Guin 2005).

1.3.3.6 SEO-Underperformance effect

According to Hansen and Lunde (2003), anomalous long-term negative abnormal returns apply to firms raising capital from external markets and are often interpreted as overreaction. Loughran and Ritter (1995) and Spiess and Affl ect (1995) document that firms conducting Seasoned Equity Offerings (SEO) earn much lower trading returns over the next three to five years than nonissuing firms with similar characteristics. Brav et al. (2000) and Eckbo et al. (2000) demonstrate that the underperformance is more pronounced for small firms and a frequent conclusion in this literature is that firms time their external financing decisions to exploit the mispricing of their securities in capital markets because of investor’s overreaction (Ritter 2003).

1.3.3.7 Size effect

The small firm effect or size anomaly relates to the finding that firms with low market capitalization earn higher risk adjusted returns than the firms documenting high market capitalization (Barry and Brown 1984). Interestingly, the empirical evidences suggest that the majority of abnormal trading returns associated with small firms occurred during January (Keim 1983). Thus, it can be said that January effect occurs primarily due to the behavior of small firms and the size effect is concentrated mainly in January (Rogalski 1984).
1.3.3.8 Weather effect

Sometimes, the behavior of market makers may be responsible for the relation between trading returns and weather. The purpose of this anomaly is to examine whether there is any difference in the trading behavior of the investors when weather is considered. In other words, whether sunny or cloudy days have any good or bad impact on the sale/purchase of securities. Weather effect is tested on stock returns and liquidity in respect of humidity, sunny, cloudy, snowy and rainy days.

Besides this, the literature is available with a number of stock market anomalies, which are summarised here i.e. Daylight Saving effect, Insider-Trading effect, Lunar effect and Stock-Split effect. Over the last hundred years, portfolio managers have reduced their sleeping hours by two hours; as a result, there is higher stress and slow response of the mind and body (Boido and Fasano 2005). The effect has been documented by B. Franklin in 1784 in USA and is in regular existence till now and much stronger between end of March and starting of October is known as the Daylight Saving effect. Whereas Insider Trading effect states that there is relationship between transactions by executives and directors in their firm’s stock and performance of the stock as the insiders believe that stock is significantly undervalued and they expect that the stock will outperform accordingly in the future.

Moreover, Lunar effect has been examined by Yuan et al. (2002) who have examined forty-eight countries and have found that stock returns are lower on days around full moon than on days around new moon. In fact, the lunar effect is independent of other Calendar-related anomalies as well as stock market volatility. Last but not the least, Stock-Split effect states that a stock split tends to increase the share price of a company due to dissemination of information for both before and after the stock splits is announced (Ikenberry et al. 1996)

In both developing and developed countries, a lot of research work has been done to examine the existence and persistence of efficient markets. In fact, financial experts at international level have examined various forms of EMH and have proved the existence

In India, research in this field received the attention of a number of academicians too (Chaudhary 1991; Broca 1992; Mittal 1994; Poshakwale 1996; Arumugam 1998; Anshuman and Goswami 2000; Ranjan and Padhye 2000; Amanulla and Thiripalraju 2001; Pandey 2002; Bhattacharya et al. 2003; Gupta and Aggarwal 2004; Kaur 2004; Nath and Dalvi 2004; Mangala and Mittal 2005; Sharma and Singh 2006).

The present study provides the existence and persistence of Week-End effect, Day-of-the-Week effect, January/Turn-of-the-Year effect, Monthly/Turn-of-the-Month effect and Holiday effect due to the reason that these effects have received much attention of researchers and practitioners all over the world. The present study will contribute towards the understanding and causes of particular effects in Indian stock market. Section 1.4 provides the nature and causes of Week-End effect. Section 1.5 describes the nature and explanations of Day-of-the-Week effect. January/Turn of the Year effect and Turn-of-the-Month effect has been introduced in Section 1.6 and 1.7 respectively. Finally, Holiday effect is discussed in Section 1.8.

1.4 MONDAY/WEEK-END EFFECT

It is well documented in the literature that the Week-End is an unusual day in the stock market. The present study has examined the robustness of the evidence on the Week End anomaly in stock return data after accounting for the impact of possible measurement error, the sample size etc.

The Monday or Week-End effect is one of the most investigated and empirically tested issues in finance (Lakonishok and Levi 1982; Keim and Stambaugh 1984; Jaffe and Wasterfield 1985; Abraham and Ikenberry 1994; Arsad and Coutts 1997; Keef and Roush 2005). In fact, there are a number of references which refute the presence of EMH and state that trading returns are minimum on Monday and maximum on Friday for
different stock markets with different causes in different countries across the world. Therefore, it can be said that it is a globalized phenomenon and has been studied in a number of countries.

Two of the most enduring suggestions for the Monday effect are the Calendar time and trading time hypothesis (French 1980; Board and Sutcliffe 1988). The Calendar time hypothesis suggests that the average Monday return should be three times the average returns that occur on other trading days of the week (Ranjan and Padhye 2000; Mangala and Mittal 2004). In contrast, the trading time hypothesis postulates that the Monday trading returns should not be significantly different from the trading returns available on any other trading day of the week\(^4\). But, the pioneer work on studies had done by a number of researchers documented different trading returns on different trading days of the week all over the world.

The Monday effect is not only confined to the equity markets rather in other markets too i.e., treasury-bills market (Gibbons and Hess 1981; Flannery and Protopapadakis 1988), gold market (Ball et al. 1982), foreign exchange rates market (McFarland et al. 1982), federal funds market (Cornell 1983), financial futures (Johnston et. al. 1991), stock index futures market (Cornell 1985; Dyl and Maberly 1986) options market (Paterso 1990) and commodities futures markets (Gay and Kim 1987; Chang and Kim 1988).

Large evidence of anomalous trading return behavior during trading intervals around regular closings brought a large number of scholars to investigate the stock return behaviour around Week-Ends or simply around the regular closings of the market (Choudhary 1991; Poshkwale 1996; Arumugam 1998; Boynton et al. 2006). The Week-End effect consists of negative equity trading returns on Monday and abnormally high returns on the last trading day of the week (Keim and Stambaugh 1982; Lakonishok and Levi 1982; Jaffe and Westerfield 1985; Lakonishok and Smidt 1988; Dickinson and Peterson 1995).

\(^4\) For details see Ranjan and Padhye (2000).
As far as reasons for negative Monday returns are considered, it might be due to the fact that on Saturday and Sunday traders have sufficient time to analyze the expected behavior of the market which implies that if they are net buyers on Friday, they might be net sellers on Monday (Gibbons and Hess 1981; Rogalski 1984). In fact, the disclosure of positive news is having quick impact on the week days and the impact of negative news on Monday shocks the investors might be considered as another basis for the above-said effect (Gupta and Aggarwal 2004).

1.5 DAY-OF-THE-WEEK EFFECT

Most of the times, researchers have used the Week-End and Day-of-the-Week effect interchangeably (Jaffe and Wasterfield 1985). The term Monday effect has also been employed to describe the Week-End anomaly (Keim and Stambaugh 1984). However, empirical evidences on Week-End effect attempt to measure returns on the trading day following the Week-End only. On the other side, the Day-of-the-Week effect phenomenon is wider in scope and considers trading returns that vary according to the Day-of-the-Week including the Week-End.

The presence of Day-of-the-Week effect would mean that equity trading returns are not independent of the day of the week and provide evidence against random walk theory. For a rational financial decision maker, returns constitute only one part of the decision-making process. Another part that must be taken into account when one makes investment decisions is the risk or volatility of returns. As a matter of fact, it is important to know whether there are variations in volatility of stock returns by the day of the week and whether a high (low) return is associated with a correspondingly high (low) volatility for a given day. If investors can identify a certain pattern in volatility, then it would be easier to make investment decisions based on both return and risk. For example, Engle (1993) argues that investors who dislike risk may adjust their portfolios by reducing their investments in assets whose volatility is expected to increase.

As a result, uncovering certain volatility patterns in trading returns might also benefit investors in valuation, portfolio optimization, option pricing and risk
management. Yet, a number of explanations have been provided in the literature for the occurrence of the particular effect, but no uniform conclusive evidences have been found till now.

1.5.1 Different plausible explanations for Day-of-the-Week effect

There are a number of explanations to describe the effect as stated below:

1.5.1.1 Effects of previous week's market performance

Last trading day of the previous week and trading returns of the previous week have significant impact on the first trading day of the following week, especially, when the trading returns of the last trading day is positive (Keim and Stambaugh 1984; Jaffe and Westerfield 1985). Therefore, it can be said that negative trading return of the first trading day of the week depends on the previous trading day's return.

1.5.1.2 Lack of liquidity and information

Seasonality on Monday is higher than any other trading day of the week whereas seasonality on Fridays is lowest across the week (Balaban 1994; Mittal 1994; Bhattacharya et al. 2003). The cost of evaluating the information about the stock market, lack of liquidity, evaluation of the portfolio by the investor might attribute towards the lowest trading returns on Monday (Lakonishok and Maberly 1990). Portfolio rebalancing, strategy defining, lack of information, lack of liquidity and vague expectations about the stock market for the following week might be the reasons of higher seasonality and lower trading returns observed on Mondays (Keef and McGuinness 2001). As a result, people avoid opening a new position in the market on the first trading day of the week. In fact, the presence of lack of information and liquidity and negative psychology on the first trading day of the week might be considered as an explanation for negative Monday returns.

1.5.1.3 Window-dressing

This hypothesis has been developed by Haugen and Lakonishok (1988) who state that the institutional managers are evaluated on the basis of their performance. They sell
risky and small cap stocks on Friday that might provide high trading returns to them. In this way, the stocks would not be included in their holdings on Friday. As a result, investment managers sell the winner stocks and purchase small-cap stocks (Lakonishok et al. 1991) on Monday.

1.5.1.4 Imperfections of the stock market

Generally, investors purchase the stock in reaction to good news in the stock market and sell them, when they find them profitable to sell, unless and until some bad news approaches the stock market (Arumugam 1998). Some market imperfections such as higher transaction cost, investment decision on Monday and disinvestment decisions taken on Tuesday could be taken as the cause for Day-of-the-Week effect.

1.5.1.5 Measurement problems

Measurement errors indicate that the opening price of Monday with respect to closing price of Fridays is positive, but close-to-close data tends to be negative (Arumugam 1998). It may occur due to the over-estimation of Friday’s closing price and under-estimation of Monday’s closing price and has been documented in a number of studies i.e., Rogalski (1984), Cornell (1985), Dyl and Martin (1985), Lakonishok and Maberly (1990), Broca (1992), Chang et al. (1993), Mittal (1994), Dickinson and Peterson (1995), Wang et al. (1997), Anshuman and Goswami (2000), Choudhry (2000), Amanulla and Thiripalraju (2001), Bhattacharya et al. (2003), Kiymaz and Berument (2003), Kaur (2004), Nath and Dalvi (2004), Holden and Thompson (2005), Keef and Roush (2005), Mangala and Mittal (2005), Yakob et al. (2005), Davidson (2006), Mazumdar et al. (2006) and Sharma and Singh (2006). This problem might be in the existence due to the choice of close-to-close data indicating measurement problems.

However, none of these reasons have been conclusively proved to be the cause of the effect. Despite the substantial efforts, academicians are trying hard to explain the phenomenon, but the peculiar pattern in weekday trading returns remains puzzling.
1.6 JANUARY/TURN-OF-THE-YEAR EFFECT

The January effect is the phenomenon where smaller stocks exhibit the presence of higher rates of trading returns during January is compared to any other month of the year (Pearce 1995; Greenstone and Oyer 2001). In addition, smaller stocks tend to outperform bigger stocks during this period. Wachtel (1942) is the first researcher who has provided the first academic reference to the presence of seasonality in January trading returns in stock returns. Thirty-four years later, Rozeff and Kinney (1976) have supported the fact that common stock returns in January are significantly larger than those in other months and that the anomaly has been related to small firms (Ritter and Chopra 1989).

The Turn-of-the-Year effect refers to the phenomenon that small stocks have abnormally high stock returns during the period beginning on the last trading day of December and continued through January, however, the situation is not so for other trading months of the year (Gultekin and Gultekin 1983; Barone 1989; Pearce 1995; Poterba and Weisbenner 2001). Even, a number of anomalies exist in the stock market, but Turn-of-the-Year anomaly has attained the considerable attention and interest among the investors and researchers as well (Jaffe and Wasterfield 1985; Ritter 1988; Maloney and Rogalski 1989).

1.6.1 Causes of January Effect

January effect exists inexplicably, although the theories underlying its existence are somewhat unexplainable (Keim 1983). The most prominent hypothesis of January effect is the tax-loss selling hypothesis and the information hypothesis. Some of the common explanations for January effect are explained below:

1.6.1.1 Tax-loss selling hypothesis

It states that investors seek to reduce their taxes by realizing losses at year end, thereby depressing stock prices. The investors re-purchase those stocks whose prices decline at the beginning of the following year and this creates the purchasing pressure on investors in turn (Saad and Moosa 2005). In addition, small firm’s portfolios are more
likely to experience this phenomenon as they are biased towards inclusion of shares that have experienced large price declines (Greenstone and Oyer 2001). This ultimately results in the January effect.

1.6.1.2 Information hypothesis

Rozeff and Kinney (1976) believe that January is a month of uncertainty due to the impending release of important financial information such as the previous year’s accounting earnings (Barry and Brown 1984; Sehyun 1988; Arsad and Coutts 1997). Such information is more likely to have a significant effect on smaller firms, as the cost of process of gathering and processing such information is very expensive (Saad and Moosa 2005). Several market microstructure studies demonstrate that this information asymmetry affects the deviation of stock prices from efficient price and the speed of price adjustments to converge to the efficient price (Katsuhiko 2009).

1.6.1.3 Role of institutional investors

Institutional investors play the role of smart traders on stock markets and therefore, may have an impact on stock market anomalies (Sias and Starks 1997). Institutional investors can be characterized as informed traders who speed up the adjustment of stock prices to new information, thereby rendering the stock market more efficient (Ritter and Chopra 1989). Institutions can obtain an informational advantage by exploiting economies of scale in information acquisition and processing (Barry 2001; Bohl et al. 2005). The institutional investors have to incur less cost of gathering and processing information than the individual traders. In addition, institutional investors may be better trained and have better resources than individual investors (Haugen and Lakonishok 1987). Hence, trading decisions of institutional investors might be stronger information-driven than those of individual investors (Saad and Moosa 2005).

1.6.1.4 Parking the proceeds hypothesis

As suggested by Ritter (1988), parking-the-proceeds hypothesis states that the Turn-of-the-Year effect is caused by the buying and selling behavior of individual
investors (Dyl and Maberly 1992). At the end of the year, individuals sell securities in order to realize the losses for tax purposes (Ritter 1988; Ogden 1990; Jones et al. 1991). As a result, all of the proceeds from the sale of securities are not immediately reinvested, but instead parked until January and re-investment of these funds creates the buying pressure and pushes up the price of the small firms in which individual investors rely upon.

There are three requirements for the effect where parking-the-proceeds hypothesis could result in the Turn-of-the-Year effect: (i) The individuals must buy stocks in disproportionate number of small stocks. (ii) Buying pressure affects the share price. (iii) Individuals are net buyers of those stocks in the starting of January because of the proceeds (parked investment) remaining from the sale of securities. These securities already sold in December will be parked in the starting of January.

Sometimes management of the firm becomes aware of non-public information in advance i.e., in early January, where December 31st is the fiscal year. There are some managers, who exploit that information to engage in trading, in which the investors on the other side of the transaction lose. In addition, the insider trading hypothesis makes no prediction regarding the observed pattern of small firms who use to exhibit the price decline in December and rising prices in January.

1.6.1.5 Role of individual investor

Positive trading returns in January are due to individuals selling rather than institutions as the individuals are more likely to sell in January because they need the week-end to decide to sell and they are uninfluenced by brokers who are unlikely to recommend selling. Individuals have an incentive to sell stocks that have declined in price. They are possessing more idle cash i.e., from year-end bonuses, holiday gift and tax-loss selling at the beginning of the year. They want to invest this cash in different stocks in the market in the starting of the year which is proved empirically that it causes higher trading returns in the month of January (Branch 1977; Dyl 1977; Brown et al. 1983; Chan 1986; Ritter 1988; Sias and Starks 1997).
1.6.1.6 Other explanations

Keim (1983) suggests that the January effect may not have an economic cause implying, the effect may be due to simulation causes such as outliers, concentration of listings and data base errors. However, conclusive evidences have been found for the decline in the January effect too. The disappearance of the January effect during the downward period could be caused by the behaviour of institutional investors as per portfolio rebalancing or window-dressing hypothesis.

At the year-end, institutional investors remove poorly performing stocks from their portfolios either because they would not want their clients to see losing stocks. This may also happen because of tax purposes under the tax-loss-selling hypothesis if they are international investors. However during downward periods, investors are not willing to buy back the stocks because expectations for the stock market are pessimistic and thus may push the stock prices even downward. In other words, the investors are reluctant to reinvest, so as to avoid the continuation of decrease in the prices. Thus, prices do not rebalance in January and consequently there is no January effect.

Even, the absence of the January effect during downward periods sheds more light on this anomaly. During the stable and upward periods, January does extremely well, however during the downward periods January is among the months with the lowest trading returns. It is suggested that an investor who is trying to exploit the January effect may consider the trend of the stock market.

However, rather than finding the reasons for the anomaly, investors are more interested in the possibility of taking advantage of the same to earn abnormal positive returns. Unfortunately, there has not been much research on the study of the significance of the January anomaly and few suggest that this anomaly is economically exploitable.

1.7 MONTHLY/TURN-OF-THE-MONTH EFFECT

Turn-of-the-Month effect states that stocks consistently exhibit higher returns on the last day and first four days of the month whereas Monthly effect states that the
average trading returns for stocks are positive for days immediately before and during the first half of the Calendar month (Ariel 1987; Dickinson and Peterson 1995; Mangala and Mittal 2004; Zhao et al. 2004). Turn-of-the-Month anomaly is a part of Monthly effect. It states that it is the concentration of positive stock returns in the last trading day and the first five trading days of each month. It suggests that it is systematic purchasing by pension funds at the turns of the months. Ogden (1990) has considered the Turn-of-the-Month effect to the temporal pattern of cash received by investors while Jacobs and Levy (1988) have explained the effect due to psychology of investors to postpone their investment decisions until the starting of every month.

It suggests that abnormally high positive trading returns at the Turn-of-the-Month and during the first half of the month are suggested to arise from the clusterization of salary payments and other liabilities (Ogden 1990), increased liquidity (Pettengill and Jordan 1988; Booth et al. 2001) and from the clusterization of earnings announcement releases (Penman 1987). In addition, the concentration of cash flows at the turn of each Calendar month causes the standardization in the payment system. Thus, as a result, investors realize substantial cash receipts at the Turn-of-the-Month which result in the presence of high trading returns at Turn-of-the-Month.

Further, inventory adjustments of different traders (Ritter 1988), the timing of trades by informed and uninformed traders (Admati and Pfleiderer 1988), specialist’s strategies in response to informed traders (Admati and Pfleiderer 1989; Prahl 1993), seasonal tax-induced trading (Lakonishok and Smidt 1986) might be considered as the explanation of the phenomenon. This can be considered most important that investors feel financially strong in the starting of the month as compared to the rest of the month. That’s why; they can go to invest the money in the market in the starting of every month.

1.8 HOLIDAY EFFECT

The Pre-Holiday effect where stock returns are higher on the preceding day to a holiday is one of the best known of the Calendar effect anomalies with its existence having been empirically confirmed in a number of studies (Lakonishok and Smidt 1989;
Pettengill 1989; Ariel 1990; Arsad and Coutts 1995; Mills and Coutts 1995). Trading on the day before holidays has produced consistently high trading returns measured for various time periods along many indices in different countries.


The previous studies have attempted to account for the Holiday effect by focussing their attention on the explanations i.e., the existence of a relationship between this effect and other Calendar anomalies. Lakonishok and Smidt (1988), Ariel (1990) and Liano et al. (1992) are amongst the firsts to attempt to explain the Holiday effect by appealing to other Calendar anomalies such as the Day-of-the-Week effect, the Monthly effect and the Turn-of-the-Year effect. Their results indicate that the high returns observed on Pre-Holidays are not observed because of the presence of other Calendar anomalies. Another explanation is based on the existence of a link between the Pre-Holiday effect and the Small Firm effect (Meneu and Pardo 2003).

The position of traders before the holiday is open to unexpected news and risk. That’s why they want to save themselves from open interest due to any unexpected news on the next trading day (i.e., the trading day after the holiday). Even positive mood of traders before the holiday helps to push up the prices in the trading on the last day before a holiday.

1.8.1 Explanations for Holiday Effect

Different explanations sought for Holiday effect can be the closing effect, transaction prices, measurement error, inventory adjustment explanations and frequency of bid and ask transaction prices. Pettengill (1989) considers the possibility that high Pre-
Holiday trading returns may result from closing effect and states that other recurring return patterns involve high returns at market closings. In other international stock markets, selling orders mostly flow on Post Holiday whereas in Indian stock market, most of the investors generally implement investment decisions just before or after holiday.

The trading returns on other days are generally higher than Post-Holiday’s trading returns when good news is released on Post-Holiday. As Post-Holiday returns are generally positive, the firms use to release bad news on the holiday, so that they can enjoy the positive trading returns on Post-Holidays. This effect could be attributed to imperfections of the stock market such as higher transaction costs, taxes and psychology of the Indian investors.

There is lack of information at the beginning of the year regarding the probability of realization of expectations for the New Year which might create uncertainty in investments. Undisclosed earnings information for the last quarter of the year might cause additional risk for the investors in trading against informed traders. Therefore, uninformed traders might require extra return for bearing this risk.

1.9 NEED OF THE STUDY

The phenomenon of Calendar anomalies has been extensively tested abroad and in India as well. Even then there is a need to explore them under different dimensions which are equally important and have not received due consideration. If anomalous return behavior is not definitive enough for an efficient trader to make profits in trading on it, then it is not economically significant (Mills 1992). It means that the theoretical aspects related to the Calendar anomalies must be having practical relevance, so that the traders can put their knowledge into actions to be benefitted from the anomalous nature of stock market. This definition of market efficiency directly reflects the practical relevance of academic research into return behavior.

As research on seasonality in volatility of returns is still at a nascent stage, the current study could possibly help in understanding and explaining such seasonality for
the Indian capital markets. The purpose of the research is to review, integrate and extend the studies of stock market anomalies and to understand the trading strategic formulation on the basis of Calendar anomalies for the utmost benefit of the investors.

Different dimensions constituting the need of the study are explained below:

(1) Due to the dynamic nature of stock market, the studies conducted in the field of anomalies get obsolete rapidly. Thus, it becomes need of the hour to update the previous research work by analyzing the stock market from time to time. The present study is an addition to and extension of the existing literature on stock market anomalies with the use of recent data with special reference to the volatile nature of Indian stock market after the year 1992.

(2) Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) are the true representatives of the Indian economy. Some authors have examined BSE (Chaudhary 1991; Broca 1992; Mittal 1994; Poshakwale 1996; Arumugam 1998; Anshuman and Goswami 2000; Ranjan and Padhye 2000; Amanulla and Thiripalraju 2001; Bhattacharya et al. 2003; Kaur 2004; Sharma and Singh 2006), while others have examined NSE (Ranjan and Padhye 2000; Kaur 2004; Nath and Dalvi 2004; Mangala and Mittal 2005). This study will examine the companies listed on both the stock exchanges, thus, covering wide dimensions to understand the nature of Indian stock market.

(3) Holiday effect is gaining attention of a number of researchers at international level, but in India, the particular effect has not been given due attention. Thus, the present study will contribute towards that aspect in Indian stock market. Moreover, except Arumugam (2001), there is no evidence that anyone has ever attempted to study the Holiday effect in Indian securities market.

(7) The Indian economy has faced a number of changes and fluctuations between the years 1992 through 2006 due to capital reforms and scams. The scope and activities of stock market has expanded frequently and rapidly due to the
liberalization drive since 1991. Therefore, the need is felt to study the market under the light of these reforms.

6. It will help the investors to see the reactions of the stock market in different time phases so that they can plan their strategies to exploit the stock market accordingly.

8. The present study could possibly help in understanding and explaining the typical and anomalous nature of Indian capital market because the impact of Rolling Settlement effect on trading decisions of investors has been examined.

9. The study will assist the investors and traders because once they come to know and understand the behaviour of stock market; they can adjust their portfolios accordingly. As a result, they can plan strategically to exploit the maximum trading returns.

10. The time period chosen for the study consists fourteen years and three months for BSE and eleven years and four months for NSE. The present study examines Indian securities market for a longer period of time as compared to earlier studies. Thus, it will benefit the investors to examine the reactions of the stock market in different time phases with a purpose to exploit the market up to full extent. In such a way, the investors and traders can understand various issues related to the Indian stock market so that they can plan and adjust their portfolio accordingly to reap the maximum benefits.

11. In India, a few studies have focused upon the existence of Turn-of-the-Month effect in Indian stock market (Pandey 2002; Mangala and Mittal 2004; Mittal 2004). Therefore in present study an effort has been made in this direction.

1.10 ORGANISATION OF THE STUDY

In the light of above discussions a comprehensive examination of Calendar anomalies is provided in the present study. The above discussion leads us towards the
detection of Calendar anomalies in Indian stock market. First three chapters provide the background of the study, while the next four chapters comment upon the Calendar anomalies existing in Indian stock market and the final one summarizes and concludes the discussion. The study is organized as follows:

Chapter 1 outlines the need of detection of Calendar anomalies, their persistence and explains the causes of their existence in detail. It considers the fundamental analysis influencing the efficiency of Indian stock market. It introduces the genesis of the research problem and provides the rationale for selection of the Indian stock market.

Chapter 2 reviews existing empirical literature on the studies conducted on Calendar anomalies in India and abroad which has been discussed in five sections: Section 2.1 reviews various theoretical and empirical studies on Week-End effect; section 2.2 presents the literature review of Day-of-the-Week effect; section 2.3 reviews the January/Turn-of-the-Year effect; section 2.4 discusses the existing literature on Turn-of-the-Month/Monthly effect and finally section 2.5 provides the factual insight into the literature related to Holiday effect.

Chapter 3 presents the research design of the study, objectives of the study, sample periods, sources of data and introduces and justifies the research methodology used to find out the answers of various research questions to be answered in the study undertaken; and to test the presence of contributing seasonal factor in Indian stock market. The chapter also discusses the limitations of the study.

Chapter 4 illustrates the practical relevance of Week-End effect in Indian stock market. Empirical results in the chapter have been discussed in three sections which present descriptive statistics, unit root test results and an appropriate model i.e., Augmented Dickey Fuller test has been applied to find out the presence of Day-of-the-Week effect in Indian stock market.

Chapter 5 examines the January effect of BSE and NSE listed companies. Further, empirical results in the chapter have been discussed in three sections through descriptive
statistics, unit root test results of stock returns and an appropriate model that have been applied to find out the presence of January/Turn-of-the-Year effect in Indian stock market.

Chapter 6 examines the Turn-of-the-Month/Monthly effect and Chapter 7 provides the facts for the presence of Holiday effect. Finally, Chapter 8 summarises the findings of the study. In addition, suggestions for future research are proposed. The study carries an exhaustive and updated bibliography. The appendices contain detailed data analysis that is referred to in the discussion part of this thesis.