Chapter II

Research Design of the Study
Statement of the Problem

Capital market, being a vital institution, facilitates economic development. It is true that so many parties are interested in knowing the efficiency of the capital market. The small and medium investors can be motivated to save and invest in the capital market only if their securities in the market are appropriately priced. The information content of events and its dissemination determine the efficiency of the capital market. In other words, how quickly and correctly security prices reflect these information show the efficiency of the capital market. In the developed countries, lots of research studies have been conducted to test the efficiency of the capital market with respect to information content of events. But in India, few studies have been conducted to test the efficiency of the capital market with respect to information like annual earnings, half yearly earnings, quarterly earnings, dividends announcement, bonus issue, right issue, buyback, mergers and acquisitions stock split etc. All these studies have been conducted with different industries with different periods. But no comprehensive study has been made so far in India to test the information content of events announcement on one industry for a particular period. Hence the present study is an attempt to test the efficiency of the Indian capital market with respect to information content of six major events (Mergers and Acquisitions, Stock Split, Buyback, Bonus Issue, Dividend Announcement and Right Issue) on IT (Information Technology) companies.

Need for the Present Study

To analyze the event which contains information, one should have adequate knowledge about corporate events like Mergers and Acquisitions, Stock Split, Dividend Announcement, Buyback Announcement, Rights Issue, Quarterly Announcement, Half Yearly Announcement etc. It may be possible for institutional investors to take favourable decision because they have Research and Development wing. But it is very difficult for Indian small and medium investors to analyze all those information. The present study aims to help investors in general and small and medium investors in particular, by way of providing adequate information about share price movement at the time of corporate event announcements. The study enables them to take appropriate investment decisions. Further, it will motivate them to contribute their small savings and surplus towards the capital market investment. These activities may increase the number of participants in the capital market and securities listed in the capital market may actively trade. Ultimately it will help the economic development of our country.
Objectives of the Study

The following are the objectives of the study

1. To identify the major events announced by Indian IT (Information Technology) companies

2. To examine the information content of events announced (Mergers and Acquisitions, Stock Split, Buyback, Right Issue, Bonus Announcement) by the IT companies

3. To test how quickly and unbiasedly the events announcement information are impounded in the security prices.

4. To test the reaction of securities prices for corporate event announcement contained information.

5. To test whether there is any difference in the Average Security Returns Variability (ASRV), Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR) between the pre and post announcement period.

6. To test whether there is any difference in the behavior of securities prices among various event announcements.

7. To identify the events which significantly influence the share prices of sample IT companies during the post announcement period.

8. To suggest investment strategies for investors, fund managers, and analysts.
Hypotheses of the Study

The following hypotheses are to be tested in this study.

1. The corporate event announcement information are not relevant for the valuation of stocks.
2. Stock Split announcement has no reaction in the security prices of IT companies.
3. Right Issue announcement has not significantly influenced the security prices of IT companies.
4. Buyback announcement has no reaction in the security prices of IT companies.
5. Bonus announcement has not significantly influenced the security prices of IT companies.
6. Mergers and Acquisitions announcement has no reaction in the security prices of IT companies.
7. Dividend announcement has not significantly influenced the security prices of IT companies.
8. The Indian capital market is informationally not efficient since corporate event announcement information are not impounded instantaneously and rightly in the stock prices of IT companies.
9. There is no significant difference in the variations of ASRV, AAR and CAAR between pre and post announcement of sample events.
10. There is no significant difference in the security price behaviour between the various corporate event announcements (stock split, right issue, buyback, bonus issue, mergers and acquisitions and dividend announcement).
11. All the six event announcements individually or collectively have no impact in the post event period compared to the pre-event period on share price.

Methodology of the Study

Sample Selection

The sample for this study includes all the IT (Information Technology) companies listed on the Bombay Stock Exchange. As on December-2006 there are 326 companies in the IT industry. Out of these 326 companies, only 110 companies come under table-A and B1 of the Bombay Stock Exchange and announced the sample corporate events during the study period. These companies alone were selected as a sample for the present study. The criteria for choosing the sample are given below.
(1) The companies, which find a place in list- A and B1 of BSE. (List A and B1 were chosen in order to ensure active trading)

(2) The availability of daily quotations

(3) The availability of the date of event announcements like stock split, right issue, buyback, bonus announcement, merger and acquisition and dividend announcement.

List of sample companies is given below.

**Sample Companies**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the Events</th>
<th>No. of Sample Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stock Split</td>
<td>69</td>
</tr>
<tr>
<td>2</td>
<td>Right Issue</td>
<td>43</td>
</tr>
<tr>
<td>3</td>
<td>Buyback</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Bonus Issue</td>
<td>44</td>
</tr>
<tr>
<td>5</td>
<td>Mergers and Acquisitions</td>
<td>21</td>
</tr>
<tr>
<td>6</td>
<td>Dividend Announcement</td>
<td>110</td>
</tr>
<tr>
<td>7</td>
<td>All Events</td>
<td>8</td>
</tr>
</tbody>
</table>

Name of the sample companies (event wise) is given in *Annexure I to VIII*

**Sources of Data**

The information relating to share price, stock split, right issue, buyback, bonus announcement, merger and acquisition, dividend announcement and the value of Sensex were obtained from “Prowess”, capital line and ERS (Equity Research Station) corporate data bases. The information regarding the growth of capital markets were obtained from RBI publications, Bombay Stock Exchange official Directory and the BSE and NSE website. Extensive use of books, journals and magazines were made for collecting required information.

The study used daily price quotations adjusted for stock split, right issue, buyback, bonus announcement, merger and acquisition and dividend announcement. The date of board meeting, which approved the event announcements, was considered
to be the date of announcement. 31 trading days surrounding the date of board meeting was taken as the announcement period (i.e. 15 days before the announcement, the day of announcement and 15 days following announcement i.e., -15, 0, +15).

**Period of the Study**

The present study is an attempt to test the efficiency of the Indian capital market with respect to information content of major corporate events (stock split, right issue, buyback, bonus announcement, mergers and acquisition and dividend announcement) in IT Industry during the period between 2000-2006.

**Tools Used for Analysis**

The information content of major events like stock split, right issue, buyback, bonus announcement, mergers and acquisitions, dividend announcement were tested with the help of following tools.

1. Security Returns Variability (SRV),
2. Average Abnormal Returns (AAR)
3. Cumulative Average Abnormal Returns (CAAR) and
4. One - way ANOVA, Friedman Test, Simple and Multiple Regression Analysis.

1. The daily returns on each security in the sample were calculated using the daily adjusted prices for dividends, bonus issue, rights issues, stock split and buy back as follows

   \[ R_{it} = \left( \frac{P_t - P_{t-1}}{P_{t-1}} \right) \times 100 \]

   Where \( R_{i, t} \) = Returns on security i on time t
   \( P_t \) = Price of the security at time t
   \( P_{t-1} \) = Price at time \( t - 1 \)

2. Relevance of corporate event information for valuing the securities are tested using the Security Returns Variability (SRV) model

   \[ SRV_{it} = \frac{AR_{it}^2}{V (AR_{j})} \]
Where SRV \( i, t \) = Security Returns Variability of Security \( i \) in time \( t \).

\( AR \ i, t \) is the abnormal returns on security \( i \) on day \( t \).

The significance of reaction in prices is tested using the t-test. The t-statistic is calculated as

\[
t_{stat} = \frac{(ASRV_i - 1) \times \sqrt{n}}{S}
\]

Where ‘n’ is the number of companies in the event and ‘S’ is the standard deviation of SRV.

3. The significance of reaction of security price to corporate event announcement are tested through Average Abnormal Returns (AAR)

\[
AAR \ i, t = \frac{1}{n} \sum_{i=1}^{n} AR \ i, t
\]

Where, AAR \( t \) is the average abnormal returns on day ‘t’ and ‘AR \( i, t \) is the abnormal returns on security ‘i’ at time ‘t’.

4. The significance of the AAR \( t \) is tested using the t statistics

\[
t_{stat} = ASRV_i \times \frac{\sqrt{n}}{S}
\]

Where, ‘S’ is standard deviation of abnormal returns.

5. The behaviour of security prices to corporate event announcement information are tested using Cumulative Abnormal Returns (CAR).

\[
CAAR \ i, t = \sum_{t=1}^{k} AAR \ i, t
\]

Where AAR \( t \) is the average abnormal returns of the sample events at the time \( t \), CAAR \( k \) is the cumulative average abnormal returns for the \( k \) th period.

6. The one way ANOVA has been administered to compare the variation of ASRV, AAR and CAAR between pre and post announcement period.

7. The Friedman test was used to compare the significant difference in the ASRV, AAR and CARR values during the announcement of sample corporate events.
8. Simple Regression and Multiple Regression Model was carried out between dependent and independent variables mainly to identify the important variables which have more influence on the dependent variable.

a) The simple linear regression model is in the form

\[ Y = a + bx \]

Where
- \( Y \) is a dependent variable (Average share price of sample companies)
- \( X \) is an independent variable (Average abnormal returns of sample event announcements taken one at a time)
- \( a \) = intercept
- \( b \) = the regression co-efficient
- \( R \) = correlation co-efficient between \( X \) and \( Y \)

\( R^2 \) = co-efficient of determination, which is normally expressed in percentage. It is the amount the independent variable explains on the dependent variable. A model is considered as a good one if the corresponding \( R^2 \) is nearer to 1 or 100% normally but any model with \( R^2 \) 80% is considered as an adequate model.

b) The multiple linear regression model is represented by

\[ Y = a + b1 x1 + b2 x2 + \ldots + bn x_n \]

Where
- \( Y \) = dependent variable (Average share price of sample companies)
- \( X_1, X_2, X_3, \ldots, X_n \) are independent variables
- \( X_1 \) = Average Abnormal Returns (AAR) of stock split
- \( X_2 \) = Average Abnormal Returns (AAR) of rights issue
- \( X_3 \) = Average Abnormal Returns (AAR) of buyback
- \( X_4 \) = Average Abnormal Returns (AAR) of bonus issue
- \( X_5 \) = Average Abnormal Returns (AAR) of mergers and acquisition
- \( X_6 \) = Average Abnormal Returns (AAR) of dividend announcement

- \( a \) = intercept
- \( b1, b2, \ldots, bn \) are regression co-efficient

In this study the value relating to simple and multiple linear regressions are calculated using SPSS 11.0 windows.
Limitations of the Study

While carrying out this study, the researcher has learnt a lot. The following are some of the limitations of the study.

1. The study is limited to Information Technology (IT) companies which have announced the sample event announcements during the study period 2000 - 2006.

2. The study is confined to only listed companies on BSE

3. As the study is based mainly on secondary data, it is beset with certain limitations which are bound to arise while dealing exclusively with secondary data.

4. There is an acute data deficiency with respect to corporate event announcements in India. Only the Securities Exchange Board of India (SEBI) currently maintains a limited database. The database maintained by a few private agencies is neither elaborate nor fully reliable as they are not available for public use on a regular basis.

5. The Capitaline and Prowess are the agencies which have been publishing information regarding the corporate event announcements in India on a regular basis. However, data compiled by the Capitaline have obvious limitations. In the absence of more reliable data, Capitaline data on corporate event announcements information are used in this study.

6. All limitations associated with various tools like ASRV, AAR, CAAR analysis, "t" test, one way ANOVA, Friedman Test, Simple Regression and Multiple Regression Analysis, which are widely used as techniques to analyze and interpret data, are applicable to this study also.
Key Terms Used in the Study

a) Market Reaction/Stock Price Reaction

Market reaction is measured by the changes in the stock prices. When the closing prices increase, then it is called positive reaction and vice versa. The price change is measured for abnormal returns and security returns variability also.

b) Abnormal Returns

It is calculated as the excess returns earned by a stock over the benchmark portfolio. The benchmark used in the present study is the BSE-Sensex. (Index of thirty active stocks listed on the Bombay Stock Exchange). If the stock returns are greater than the sensex returns, it is called positive abnormal returns and vice versa.

c) Announcement Period

The announcement period is the period surrounding the announcement of events (Stock Split, Right Issue, Buyback Announcement, Bonus Issue, Mergers and Acquisitions and Dividend Announcement) by the companies. For the purpose of this study, date of board meeting in which the board approved the corporate event announcement is taken as day of announcement.

d) Efficient Market

A market is said to be efficient if securities traded on the market capture the content of information in its prices rapidly and unabashedly.

e) Stock Buyback

The repurchase of common stock or ordinary shares either by purchases in the market or by tender.

f) Stock Split

It means that the face value of ordinary share or common stock is divided to create additional number of issued shares. It raises no new capital for the company.
g) **Right Issue**

It is an offer of new shares to existing shareholders usually in a particular proportion to existing holdings. To ensure the issues sold, the shares are offered at a discount to current market prices.

h) **Mergers and Acquisitions**

It refers to the consolidation of companies. A merger is a combination of two companies to form a new company while an acquisition is the purchase of one company by another in which no new company is formed.
Organization of the Thesis (Chapter Scheme)

Chapter-I: An Overview of Indian Capital Market

The Indian financial system and a brief history of the performance of Indian Capital Market is discussed in the first chapter. Besides, it explains the different forms of market efficiency and efficient market hypothesis.

Chapter-II: Research Design of the Study

The second chapter introduces the problem under study and describes the data and methodology used in the study, besides objectives and hypotheses used in this study.

Chapter-III: Review of Literature

The literature relevant to the study is elaborately reviewed in the third chapter to understand the gap in research on testing the Indian stock market efficiency with respect to corporate event announcement.

Chapter-IV: Analysis of Security Returns Variability

The fourth chapter discusses the security returns variability of all sample event announcements i.e. stock split, right issue, buyback, bonus announcement, mergers and acquisitions and dividend announcement.

Chapter-V: Analysis of Average Abnormal Returns

The reaction of security prices to corporate event announcement, Average Abnormal Returns (AAR) for all the sample events i.e. stock split, right issue, buyback, bonus issue, mergers and acquisitions and dividend announcements are analysed in chapter V.

Chapter-VI: Analysis of Cumulative Average Abnormal Returns

The sixth chapter examines the informational efficiency of stock market direction of share price movement around the corporate event announcement i.e. stock split, right issue, buyback, bonus issue, mergers and acquisitions and dividend announcement.
Chapter-VII: Comparison of ASRV, AAR and CAAR between Announcement Periods

The comparison of various event announcements between pre and post announcement period and the analysis of SRV, AAR and CAAR, simple and multiple regression models are discussed in chapter seven.

Chapter-VIII: Summary of Findings, Suggestions and Conclusion

The last chapter summarizes the major findings, suggestions for investment strategies and measures for improving the Indian capital market.