3.1 Objectives of the study

The main objectives of the study are:

- To evaluate the presence of abnormal returns of stock split and bonus shares around announcements and effective dates.
- To evaluate the effect of stock split and bonus announcements on liquidity of the stock market.

3.2 Hypothesis of the study

To fulfill the above mentioned objectives, certain hypotheses are made. With the help of these hypotheses, the stock splits and bonus share’s announcement effects can be studied deeply.

\( H_{01.1} \): There is no significant difference between the abnormal returns earned before and after the stock split announcements in the stock market.

\( H_{01.2} \): There is no significant difference between the abnormal returns earned before and after the bonus issue announcements in the stock market.
\( H_{02.1} \): There is no significant difference between the liquidity of stock market before and after the stock split announcements in the stock market

\( H_{02.2} \): There is no significant difference between the liquidity of stock market before and after the bonus issue announcements in the stock market

3.3 Research Design

In this project, experimental research design is used. Experimental research design is characterized by the possible cause- and-effect relationship by manipulating one independent variable to influence the other variable(s) in the experimental group, and by controlling the other relevant variables, and measuring the effects of the manipulation by some statistical means.

3.4 Sampling Plan

To test the above hypothesis, the companies that went for the stock split and bonus shares from January 2007 to December 2011 is taken. All these companies are listed on the NSE i.e. National Stock Exchange. But some of the companies are not taken in this sample and the details for the same are given below:

- The companies for which stock split and bonus shares coincide with other events like right issue, open-offer and de-merger announcement etc.
In this study, sample size of 125 companies is taken. For taking the representative sample, 25 companies are taken from each year and for selecting these 25 companies, random sampling technique is used.

3.5 Data Collection

In this, secondary data is used. The data required for this study is taken from Prowess software, NSE website i.e. www.nseindia.com.

3.6 Data Analysis Tool

The data is analyzed using Paired Samples t-test. The Paired Samples t-test compares the means of two variables. It computes the difference between the two variables for each case, and tests to see if the average difference is significantly different from zero. Both variables should be normally distributed.

3.7 Data Analysis methodology

- **Effect on Share Price:**

Event study methodology was adopted in this study. Event study is a standard approach in the area of financial economics. An event study is designed to examine the market reaction to any event under observation using abnormal return
criteria. For this, data has to be divided into various windows. Under this methodology, the effect of that event on the stock prices and liquidity is studied. Under the windows so created, the effect some days after the event and the compare it with the changes in the same indicator for some days before the event day is studied. It has always been a debatable issue when it comes to choosing window length and different lengths are used by different researchers for the study. But all researchers agree on this point that these windows are selected to capture the effects of the announcement precisely. This is a pioneer study in its field. This approach is also used to study efficient market hypothesis.

The advantage of the event study methodology is that the economic impact of an event can be measured using the observations on stock prices over relatively short period of time, since it should be immediately reflected in the stock prices, given the efficiency of the markets. The hypotheses are tested empirically by looking at the stock market reaction to the events.

- **Effect on trading Volumes:**

In this, the changes in the trading volumes of the share around the event window are examined. Due to stock split and bonus share, there is a change in the trading volumes. To study the effect on liquidity of a firm’s share, the same
procedure described above for the share prices is applied. The volumes of the shares are averaged over securities and after that it is analyzed about if any difference comes.

- **Abnormal Returns:**

  The returns generated by a given security or portfolio over a period of time that is different from the expected rate of return is called abnormal return. We can also define abnormal return as the difference between the actual return and the normal return. So, out of the window created above, the abnormal performance of the returns associated with the event is measured.

- **Pre announcement & Announcement Window:**

  With the help of this window, the effect of the announcement of split information in the market is studied. As split information comes in the market what happens to the share prices and what effect comes in the trading volumes. Even, the effect of pre-announcement of stock split and bonus shares on share price and trading volume is also observed.

- **Effective and Post – Effective Window:**

  This window is made the post split changes in the share price and the trading volumes. With the help of this, it is studied that what are the changes in the stock after the split
and bonus shares are allotted and then comparing with the average changes in the stock price and in the liquidity.

- **Estimation Procedure:**

  The events of interest are as follows:
  a) Bonus announcements.
  b) Stock splits announcements.
  c) Bonus share effective dates.
  d) Stock splits effective dates.

  As event window of 61 days is used i.e. 30 days before and 30 days after the event day and event day itself. The event day is the date of first board meeting when board considers stock split and bonus share for the first time and then comes for the first time in the market. The ex-split ad ex-bonus is the event day for the second window which is also called post effective window and the first window is called the pre announcement window.

  The event day is denoted as 0\(^{th}\) day and 30 days before event day are denoted from -30 to -1 and 30 days after stock split and bonus share are denoted as +1 to +30 days. S&P CNX Nifty is used as a proxy for the market portfolio. Market returns are calculated using CAPM model.
Daily Return:

Daily Returns for each sample company are computed for the window as given below:

\[ R_{it} = \frac{(P_{it} - P_{it-1})}{P_{it-1}} \]  

\[ \text{Eqn. 1} \]

where, \( P_{it} \) and \( P_{it-1} \) are the daily prices for the company “i” at time “t” and “t-1” respectively.

Actual Return:

Actual Returns for the market are also computed as:

\[ R_{mt} = \frac{(I_{t} - I_{t-1})}{I_{t-1}} \]  

\[ \text{Eqn. 2} \]

where, “I_{t}” and “I_{t-1}” are the daily index values at time “t” and “t-1” respectively.

Expected Return:

Expected returns on a stock have been estimated using the CAPM model given below in the equation:

\[ R_{ei} = R_{f} + \beta_{i}*(R_{mt} - R_{f}) + E_{it} \]  

\[ \text{Eqn. 3} \]

where, \( R_{ei} \) is the expected return on stock “i,” \( R_{f} \) is the risk-free rate, \( \beta_{i} \) is the beta of stock “i,” \( R_{mt} \) is the market return, and \( E_{it} \) is the unexpected return.
The formula for the same is given below:

\[
AR_{it} = R_{ei} - \{R_f + \beta_i*(R_{mt} - R_f)\} \quad \text{.... Eqn. 4}
\]

where, “\(R_{ei}\)” is the observed daily return for the share of a company “\(i\)” at time “\(t\)”.

“\(R_{mt}\)” is the observed market return for the market index at time “\(t\)”.

“\(R_f\)” is the risk free rate given on a treasury bill.

“\(\beta_i\)” estimate for the beta share of company “\(i\)”.

“\(E_{it}\)” is the independently an identically distributed residual error term.

- **Average Abnormal Return (AAR):**

In order to eliminate the effect of any security on abnormal returns, the abnormal returns are averaged over the number of companies. The abnormal returns are averaged over the surrounding the event day.

\[
(AAR)_t = \frac{\sum_{i=1}^{n} AR_{it}}{N} \quad \text{.... Eqn. 5}
\]

- **Cumulative Average Abnormal Return (CAAR):**

With a view to know the cumulative effect of AARs on days surrounding the event the cumulative average abnormal
return (CAAR) are calculated for the event days $t_1$ and $t_2$ by summing the average abnormal returns for these days, that is:

$$(CAAR) = \sum_{t=t_1}^{t_2} AAR_t$$

..... Eqn. 6

3.8 Limitations of the study

The limitations of financial models and statistical tools used in the study have become a part of the study also.