Chapter 3

Research Methodology

Research is the systematic and objective identification, collection, analysis, dissemination, and use of information and data for the purpose of improving decision making related to the identification and solution of problems and opportunities in the various aspects of the business areas.

Each phase of the research process is important. Firstly, the research problem or the opportunity is identified to collect the required information needed to investigate it. Next, the relevant information sources are identified and the range of data collection methods varying in sophistication and complexity are evaluated for their usefulness. The data are collected using the most appropriate method, analyzed and interpreted, and inferences are drawn. Finally, the findings, implications, and recommendations are provided that allows the information to be used for the appropriate decision making in the relevant business area to implement it practically.

3.1 Need for the Study

It has been found through the literature review that many studies have been conducted on predicting the ex post and ex ante equity risk premium expectations of the investors investing in the International Capital Markets basically in the US and UK Markets, but very mere studies are available for the investors investing in the Indian Capital Markets. As the Indian Capital Markets are developing and are not as mature as the US and UK Capital Markets, therefore the characteristics of both these markets are different, so attempt has been made to study the risk expectations of the investors in the Indian Capital Market. The study is important for both the investors and the corporate to calculate equity return and equity cost respectively as these are very important factors in investment and financing decision. Also, this calculates the cost of risk attached to the investment and motivates them to invest judicially in the market.

Under this umbrella heading “Estimating the Equity Risk Premium Expectations of the Investors in the Indian Capital Market”, the various precise objectives are defined to provide a direction
and definite solution to the each problem making the equity risk premium expectations for each scenario in an optimum way.

3.2 Objectives of Study

❖ To identify behavioral/ psychological factors those affect the equity risk premium expectations of the investors.

A few studies are available to identify the psychological and behavioral aspects of the investors while investing in the Indian Capital Market. This objective studies if the behavioral factors impact the equity risk premium expectations of the investors or only the market related factors are responsible enough for the same irrespective of the investor individual behavior. For this, CAPM the Capital Asset Pricing Model, the most efficient and commonly used model of estimating the return expectations is checked on its validity in the Indian Capital Market and proving that the psychological factors affect the return expectations if the CAPM proves invalid which means there are other than market factors that determine the return expectations of the investors.

❖ Identify the financial variables which may have probable effect on the Equity Risk Premium Expectations.

In this objective, the various financial factors are identified other than the market factors that may have the probable effect on estimating the equity risk premium for the investors in the Indian Capital Market. These variables are identified through the previous studies that had already conducted by the various researchers in the various countries and different scenarios and then seeing the impact of these variables in the Indian Capital Market in the different scenarios. Some of the variables identified which may have the probable effect on the same are beta of the stock, Earnings per share (EPS), Dividend Payout Ratio, Debt Equity Ratio, Current Ratio, Return on Assets, Net Profit Margin in %, P/E Multiple and P/B multiple which are discussed later in this chapter.

❖ To verify the extent of effect of above identified variables on the equity risk premium.

In this objective, all the variables identified above are studied and analyzed to see the effect of these in estimating the return expectations of the investors by analyzing the ex post returns
earned by the investors in the last ten years and then superimposing these variables of the same above said period on the returns earned and thereby concluding the effect of these variables in predicting the equity risk premium expectations in future by applying the forecasting tools like the regression analysis. This also studies which variable and to which extent that variable effects the ERP expectations and enables the investor to predict the return expectation in future knowing the values of these variables of that year.

❖ **To see if the Market Capitalization affects the Equity Risk Premium Expectations of the investors.**

The Indian Stock Market has the different stocks of the different capitalization including the large cap, mid cap and the small cap in which the investors can invest their surplus capital and earn the returns. This objective studies that if the market capitalization is indifferent for the investors in making his ERP expectations or the investors demand different risk premiums while investing in the different capitalization stocks. This is studied by categorizing the capital market into three above said categories and then analyzing the ERP expectations on these three categories separately and compares them.

❖ **To check if the Equity Risk Premium Expectations of the investors vary during the financial recession.**

This objective identifies the effect of recession on the ERP Expectations of the Investors that whether the investors demand the differential risk premium during the recession or the financial crisis period. This is studied by diving the last ten years into pre recession (2003 – 2008) and post recession period (2008 – 2013) and analyzing the ERP expectations of the investors in each period on the same stocks and then analyzing the fact that if the recession affects the ERP Expectations of the investors while investing in the Indian Capital Market.

### 3.3 Research Design Formulation

To achieve the above objectives, the efficient research design is formulated which tests the hypothesis, give the possible answers to the problems and provide the information needed for the decision making. The Hypothesis is formulated for each objective which is analyzed and proved to be true or false by applying various analytical tools discussed in the later chapters. The various Hypotheses formulated for this research are as follows:
3.3.1 Hypothesis 1:
Null Hypothesis (H₀): The null hypothesis predicts the validity of CAPM model says that the CAPM is valid and the market risk is the only factor that affects the equity risk premium expectations of the investors while investing in the Indian Capital Markets.

Alternate Hypothesis (Hₐ): The alternate hypothesis says that the CAPM model is not valid, and hence there are other factors too that affect the ERP Expectations of the investors while investing in the Indian Capital Markets.

3.3.2 Hypothesis 2:
Null Hypothesis (H₀): Here the null hypothesis is that all the variables are independent and have no effect in estimating the equity risk premium expectations of the investors.

Alternate Hypothesis (Hₐ): The alternate hypothesis is that these variables affect the equity risk premium expectations of the investors while investing in the Indian Capital markets and help in predicting the ERP expectations.

3.3.3 Hypothesis 3:
Null Hypothesis (H₀): Here the null hypothesis is that the market capitalization is independent in predicting the equity risk premium expectations of the investors in the Indian Capital Market. This means the risk premium expectations will not be reflected by the market cap or the size of the company, that is the equity risk premium expectations are same irrespective of large cap, mid cap and small cap companies.

Alternate Hypothesis (Hₐ): The alternate hypothesis is that the market capitalization affects equity risk premium expectations of the investors and the investor perception changes with the change in the market capitalization while investing in the Indian Capital markets and help in predicting the ERP expectations of the investors.

3.3.4 Hypothesis 4:
Null Hypothesis (H₀): Here the null hypothesis is that there will be no effect of the recession in predicting the equity risk premium expectations of the investors in the Indian Capital Market. This means the risk premium expectations will not be reflected by the recession that is the equity risk premium expectations are same pre recession and post recession.
**Alternate Hypothesis (Hₐ):** The alternate hypothesis is that the equity risk premium expectations of the investors changes during the recession period while investing in the Indian Capital markets and help in predicting the ERP expectations of the investors in the recession period.

The above 4 hypotheses are formulated in order to analyze the equity risk premium expectations of the investors in different scenarios in the Indian Capital Market. For analyzing these hypotheses, the research is divided into two parts, the explorative research and the descriptive research.

### 3.4 Explorative Research

The explorative research design has done to explore the various probabilistic variables that may have the effect on the ERP Expectations which provide the base for the descriptive study. This is done by reviewing the previous literature which had already done by the various researchers in this field. Some of the insights which are explored through this study are as follows:

i) **Defining the problem more precisely:** In this research, this explorative design is used to identify the problem of the research through the qualitative study of the various literature already published in the relevant area and identify the importance of this equity risk premium for the investors to invest in the capital markets.

ii) **Identifying the different course of actions:** In this step, the various methods and the historical estimation of the equity risk premium are explored to estimate the equity risk premium which becomes the base for the future estimations of the risk premium to invest in the equity.

iii) **Develop the basis for the hypothesis formulation:** It also provides the basis for the hypothesis formulation and to analyze the hypothesis to have the appropriate solutions.

iv) **Identifying the various variables under examination:** The various financial and non-financial variables are explored using the exploratory research design that may affect the equity risk premium of the investors to invest in the equity market.

v) **Gain insights for developing the approach to the problem:** Various approaches and existing models for estimating risk premium like the Capital asset pricing model (CAPM), the arbitrage pricing theory and the multi factor model are studied to have the insights of the risk premium and studied the assumptions of these models and the challenges of these
assumptions in implementing them in the practical situations and thereby design a model which is more adaptable to the practical situations.

These variables are then analyzed in detail through the conclusive research design which is descriptive and causal to find the answers to the required research problem. The conclusive research design is described below:

3.5 Descriptive Research
In the descriptive study, the problem is analyzed in detail quantitatively through the analysis of the relevant data and then describing the problem in detail and finding the solutions analytically through the formulation of the hypothesis and examining the relationships between the variables and analyzing which variables cause the major effect on the ERP expectations for the investors.

The following insights are analyzed through the descriptive study:

i. To describe the characteristics of the relevant market and the linkage of the market with the other financial markets. Like in this research, the descriptive research is used to describe the characteristics of the Indian Capital markets, the various products and opportunities available for the investors in the capital market, the possible risk and return associated with each product and the functions and the bodies involved in the functioning of the capital markets.

ii. To describe the characteristics of the Indian investors in the Indian capital markets regarding their investment tastes and preferences based on their risk and return appetite and also their behavioral aspects in investing in the equity market and judging their expectations in the equity market.

iii. To describe the various financial and non-financial variables that may have probable affect on the equity risk premium expectations for the investors in the Indian Capital markets, which are analyzed through the causal research to see the cause and effect relationship between the return expectations and the variables identified.

iv. To describe the various models and methods that can be implemented in analyzing the risk premium expectations of the investors.

v. To describe the required population of the study which in this research is the all the companies which are listed in the Indian stock exchanges, and the various government and other environmental factors that may affect the population under study.
vi. To understand the variables that are the cause (independent variables) and which variables are the effect (dependent variables) for the phenomenon. In this research, the causal research is done to see the effect of the various financial variables (independent variables) defined above in the chapter on the equity risk premium expectations of the investors in the Indian Capital markets in the various environments.

vii. To determine the nature of relationship between the causal variables and the effect to be predicted: As in this research, the extent of relationship is also measured as how much each variable impact the equity risk premium expectations of the investors in the Indian Capital Markets.

3.6 Sample Design
Sampling is done to select the sub part of the population which represents the whole population called as sample to implement the analysis on it and present the appropriate results, as in most of the cases the study on the population is not possible and feasible. Here in this study the population of the study is all the public limited companies listed in the stock exchanges in the Indian Capital Market as the investor can invest in any of these companies and expect a premium on his investment. These companies can be categorized based on their size i.e. Large Cap Companies, Mid Cap Companies or Small Cap Companies; or on the basis of the sectors like the IT companies, Automobile sector companies, Power sector companies, Banking sector companies, Healthcare companies, FMCG companies etc. There are total of 3,686 public limited companies (Source: http://www.crmz.com/directory/CountryIN.html) which is the target population of the study as these comprises of the equity in which the investor expects the risk premium on investment in the shares of any of these companies shares. A census involves the complete enumeration of all the elements of the population. This means census study is the study of parameters of all these 3,686 public limited companies whose shares are listed in the Indian stock market.

As it is next to impossible to study or calculate the parameters of all the 3,686 companies which is the target population, therefore a subgroup of the companies are selected from them which participate in the study which represents the total population so that the study and statistics can be calculated now on the small group and the results of the sample study can be inferred to the whole population as sample is the representative of the population only. Sample characteristics,
called statistics are then used to make inferences about the population parameters. The inferences that link sample characteristics and the population parameters are estimation procedures and the tests of hypothesis.

The efficient sampling process includes the following five steps which are closely interrelated and relevant to all aspects of the research problem to the presentation of the results and are discussed as follows:

3.6.1 Define the Target Population: The target population must be defined precisely; otherwise it resulted in ineffective research. It involves translating the problem definition into a precise statement of who should and should not be included in the sample. The target population specifies the desired target group in the whole universe which is directly related to the research problem. The target population should be defined in terms of elements, sampling units, extent and time. An element is the object about which or from which the information is desired. Here the elements are the all public limited companies which are listed in the Indian Stock Exchanges. A sampling unit is a unit containing the element that is available for selection at some stage of the sampling process. Extent refers to the geographical boundaries like the geographical boundary here is confined to the Indian Capital Market and the target population is only confined to the Indian Market. The time factor is the time period under consideration. Here the time for the population study is the entire history of the equity market evolution in India which is nearly 200 years since 1830’s.

3.6.2 Determine the Sampling Frame: A sampling frame is a representation of the elements of the target population. It consists of a list or set of directions for identifying the target population. The sampling frame here is an association directory listing the firms in the industry which is the official list of all the companies listed in the Bombay stock Exchange (BSE) or the National Stock Exchange (NSE) which is available on www.bseindia.com and www.nseindia.com. The list of the companies listed in the associate directory of the stock exchanges is taken as the sampling frame from which the various companies are sampled for the study. The sampling frame can be further classified into some characteristics of the companies discussed above on the basis of classification of the firms on which the researcher select the companies for the study which provides the base for the effective sample design.
3.6.3 Select the Sampling Technique(s): The sampling technique involves the method used in selecting the efficient sample from the population which best suits the situation with the minimum cost, efforts and the sample errors.

There are various techniques available for the sampling process which is classified on the basis of the probability and the non probability sampling. In this study, both the techniques are applied to have the effective sample.

For the study, the population consists of all the companies which are registered in the Indian Capital Market, either in any of the exchanges of India whether the national or the regional stock exchanges. So, firstly the Bombay Stock Exchange (BSE) is selected to take the sample as it is convenient to get the data from the central exchange as it is more structured than the regional exchanges and represent the companies of the India as a whole which is our required study. Also it is the oldest exchange of India as compared to the National Stock Exchange (NSE), thereby making the sample effective.

The stratified random sampling is used further to select the companies from the Bombay Stock Exchange. The companies listed in the BSE are classified into three strata based on the large cap companies, mid cap companies and the small cap companies, with all large cap companies under one strata, mid cap under another strata and the small cap companies under the third strata. For sampling, 20 companies are selected from each category thereby sample represents the population, as sample contains all types of the companies present in the population. Also, the companies are selected from these strata randomly so that the each sector company has the equal chance to enter in the sample, and the sample contains the companies of each sector.

For selecting the sample in the time frame, the period of ten years that is from financial year 2003 to 2013 is selected from the whole period of evolution of the Indian Capital Markets. The period is chosen through convenient and judgment sampling method, as the ten years data is sufficient to draw some inferences of the study which are also the immediate past ten years and this is used to predict some future results in the Indian Capital Markets for the expectations of Equity Risk Premium. Also, it is not required to take the too much old data as the study is about the current or the future expectations and there were many modifications in the capital market since then, so taking the old data before 2003, is meaningless and does not provide any fruitful results.
3.6.4 Determine the sample size
The sample size for the study is chosen to be 60 companies of Indian Capital Market with 20 companies each of large cap, mid cap and small cap which belongs to all the different sectors of the economy. The data is collected for all the selected companies for the last ten years from 2003 to 2013. The sample size of 60 companies and the period of 10 years is sufficient enough to draw the expectations in the equity risk premium for the investors.

3.6.5 Execute the sampling process
The sampling process is executed through the above said process by selecting the companies from the Bombay Stock Exchange and taking 20 companies from each of the large cap, mid cap and small cap companies.

3.7 Data Collection
The data for the study can be collected through the primary and the secondary sources. For this study, the secondary data has been collected, for which the data has been collected from the annual reports of the sampled companies from sampled period of 2003-2013 to calculate the various financial variables discussed below in the chapter and the prices of the shares of the companies from the historical data reports from 2003 to 2013 of the Bombay Stock Exchange. The data is collected for the above identified factors from the above said sources that affect the equity risk premium expectations of the investors in the Indian Capital Markets. The financial items required for the calculation of these factors are collected from the annual reports of the companies and are calculated through these and then are analyzed to draw the results.

3.8 The Identified Financial Variables
i) Beta of the company: Beta is defined as the financial elasticity or correlated relative volatility, and can be referred to as a measure of the sensitivity of the asset's returns to market returns, its non-diversifiable risk, its systematic risk, or market risk. On an individual asset level, measuring beta can give clues to volatility and liquidity of the stock in the marketplace and is measured by

\[ \beta = \frac{\text{Covariance (security returns, market returns)}}{\text{Variance (market returns)}} \]
So, the beta of the securities is calculated by regressing the daily stock returns with the market returns and market chosen here is the BSE Sensex, as this is the most representative market index.

**ii) Earnings per Share:** Earnings per share (EPS) is the rupee value of earnings per each outstanding share of a company's common stock which determines the net earnings available to an equity shareholder and is calculated by:

\[
EPS = \frac{\text{Net Profit} - \text{Preferred Dividends}}{\text{Weighted Average Common shares}}
\]

**iii) Dividend Payout ratio:** D/P ratio is the fraction of the profits of the firm which the firm distributes to its shareholders as dividends and the rest will be retained by the firm for the future growth prospects. The dividend payout ratio may determine the ERP as some investors think that the firm distributing dividends or having a higher dividend payout have the prosperous prospects in future and may have demand less premium for these stocks. It is calculated by:

\[
\text{Dividend Payout Ratio} = \frac{\text{Dividends declared during the year}}{\text{Net Income for the same period}}
\]

**iv) Debt Equity Ratio:** The debt equity ratio determines the component of the borrowed capital and the owned capital in the total capital structure of the firm. The more the borrowed capital in the firm, the higher is its D/E ratio. The investor perceives the firm with the higher borrowed capital as the risky one and may have the higher premium expectations for that. This is calculated by:

\[
\text{Debt Equity Ratio} = \frac{\text{Total Borrowed Capital (Debt)}}{\text{Owned Capital (Equity)}}
\]

**v) Current Ratio:** The current ratio measures whether or not a firm has enough resources to pay its debts over the next 12 months. The current ratio is an indication of a firm's market liquidity and ability to meet creditor's demands. If current liabilities exceed current assets then the company may have problems meeting its short-term obligations. If the current ratio is too high, then the company may not be efficiently using its current assets or its short-term financing...
facilities. This may also indicate problems in working capital management. So, this ratio may also determine the effectiveness of the firm financing policy and thereby the premium expectations. It is expressed as:

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}
\]

vi) Return on Assets: The return on assets (ROA) in percentage shows how profitable a company's assets are generating revenue. This ratio determines what the company can do with what it has, i.e. how many rupees of earnings they derive from each rupee of assets they control. The higher the return on assets means the firm is able to earn more through its existing assets. This ratio also determines the profitability of the organization and the optimum utilization of the resources, indicating the performance of the organization and thereby may impact the premium expectations. It is expressed as:

\[
\text{Return on Assets} = \frac{\text{Net Income}}{\text{Average Total Assets}}
\]

vii) Net Profit Margin: It is a measure of the profitability of the firm. It determines the net profit of the firm as a percentage of the revenue. Profit margin is an indicator of a company's pricing strategies and how well it controls costs. It is expressed as:

\[
\text{Profit Margin} = \frac{\text{Net Profit}}{\text{Average Total Revenue}}
\]

viii) P/E Ratio: P/E ratio is a valuation ratio of a company's current stock price compared to the company earning per share. It is expressed as:

\[
P/E = \frac{\text{Market Value per Share}}{\text{Earnings per Share (EPS)}}
\]

For example, the company share is currently trading at Rs 50 a share and earnings over the last year were Rs. 2.5 per share, the P/E ratio for the stock would be 20 (Rs 50/Rs 2.5). Sometimes it is also known as price multiple or earnings multiple.
The high value of P/E suggests that investors are expecting higher earnings growth in the future as compared to companies which have a lower P/E value. This ratio is more useful to compare the companies of the same industry as different industries have the different growth prospects. The P/E is sometimes referred to as the "multiple", because it shows how much investors are willing to pay per rupee of earnings. The P/E multiple of 20 means that the investor is able to pay 20 times the earning of the share in anticipation of the growth prospects of the company.

ix) P/B Ratio: This ratio is used to compare a stock's market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter's book value per share. It is expressed as:

\[
P/B = \frac{\text{Market Value per Share}}{\text{Total Assets} - \text{Intangible Assets and Liabilities}}
\]

A lower P/B value means that the stock is undervalued. This also means that there is some problem in the company fundamentals and it also varies from industry to industry. As this ratio is based on the book value, which is the historical value of the company, so it also tell the investor whether he is paying too much for if the company went bankrupt immediately.

3.9 Calculation of the identified financial variables

3.9.1 Calculation of the Equity Risk Premium:

To calculate the equity risk premium of the various securities, first the daily prices of all the securities have taken from the Bombay Stock Exchange (www.bseindia.com) of all the 60 companies from 2003 to 2013, then adjusting these prices for the stock splits if any in any of the years of each company, for example if a company announces a stock split as on particular date of 1:5 which means after that date, the one share of the company converts to 5 shares, and the stock price after that date falls drastically as before splitting, the price is for the whole lot of 5 shares and now it become one share, so the price before split has to be adjusted to the same unit. So, for adjusting the same, all the stock prices pre announcement of the stock split must be adjusted by dividing the prices by the splitting factor so that all the stock prices comes on the same unit, which removes the effect of the stock split, because the company split stock only to make it
affordable to the investors, but fundamentally the stock split does not change the stock price. The daily adjusted stock prices are then averaged to calculate the annual security price, and from which the annual returns of the security are calculated by applying the formula:

\[ R_i = \frac{(P_i - P_{i-1})}{P_{i-1}} \times 100 \]

Where \( P_i \) is the current year price and \( P_{i-1} \) is the previous year price.

The risk free rate of return that is the average return of the 10 year government bond is subtracted from this return as this is considered to be the risk free rate to come out with the figure of the equity risk premium.

3.9.2 Calculation of the beta:

Beta of the stocks is calculated by regressing the daily adjusted stock returns with the market returns that is BSE Sensex of the same time period. The beta of each year is calculated separately for each company. It is calculated by applying the following formula in the excel sheet.

\[ \text{Beta} = \frac{\text{Covariance (Average Annual daily security returns, Average Annual daily market return)}}{\text{Variance (Average Annual daily market returns)}} \]

3.9.3 Calculation of the other ratios:

All other ratios are calculated by taking the data from the financial statements of the various companies under study of the mentioned period. The relevant data is collected from the financial statements of the companies of the required year and the ratio is calculated according the formula described above. In the same manner, all the factors are calculated to get analyzed and see the effect of these parameters on the equity risk premium expectations of the investors.

3.10 Data Preparation and Analysis

The data collected is now prepared in an appropriate way in the excel sheet so that the data can be analyzed easily. The separate excel sheets are made for each year (2003-2013) and for the consolidated 10 years data. The data is placed in the excel sheet as the matrix of the data with all the factors like beta, D/E ratio, D/P ratio discussed above in the columns and the companies in the rows. The 60 companies are placed in the rows with their corresponding factor values in the matrix in front of the respective company and the corresponding factor. In this way, the data has
been prepared as a separate sheet of each year data and the one with all the consolidated 10 years which can be analyzed further to draw the results.

3.11 Data Normalization:
Before analyzing the data, the data should be normalized so that all the data is in same scale which makes the analysis more reliable, accurate and therefore the results obtained are effective. For checking the normality of the data of each year and the consolidated one, the various tests of normality are applied in the SPSS to see if the data collected is normal or not. Some of the tests are like Kolmogorov-Smirnov, Shapiro Wilk tests and the normal Q-Q plots for each variable in the data set. The significant values of these tests shows the normality condition of these variables and the straight line plot of the Q-Q plots shows the variable is normal. Any deviations from the straight line, shows the non-normality of the variable.

3.11.1 Making the data Normal
Sometimes, the initial data collected is not normal, so there are ways to transform the data in some form so that the data becomes normal and fulfills the criterion of normality, and further tests can be applied for analyzing the data. The various transforms are applied to make the data normal like inverse transforms, in which all the values in the data sheet are reciprocated including both the dependent and the independent variables, which may increase the significance level of the tests values of the variables discussed above. The second transformation used can be the log transformation in which the log values of the whole data set are taken to make the data normal. The tests of normality discussed above are applied again in each transformation to check the appropriateness and see the effectiveness of each transformation.

The best transformation is chosen which have the best results of the normality criterion and maximum number of variables fulfills the condition of normality.

Here the log transformation gives the best result which satisfies the normality condition for majority of the variables in each year. So, the log of the whole data is taken before applying the further analysis tools to make the results efficient, reliable and accurate. The tests of normality using the log transformation are presented in the Annexure 1.
3.12 Data Analysis:
In the last step, the data is analyzed, to extract the results which show the factors affecting the equity risk premium of the investors in the Indian Capital Markets. The data is analyzed by applying the multiple regression tool in the SPSS by the Enter method, in which the company returns are taken as the dependent variable and all the other variables like net profit margin, Return on Assets, Current Ratio, Debt Equity Ratio, Dividend payout Ratio, Beta of the stock, EPS, P/E multiple and the P/B multiple are taken as the independent variables and are entered into the regression model simultaneously rather than stepwise in which each variable is entered stepwise with the most affected variable entered first and so on. In this way, the effect of these variables is seen on the investors return expectations, with the individual values of the regression coefficients.

The multiple regressions are applied for analysis of the data with the following parameters to be checked before interpreting the results of multiple regressions.

3.12.1 Regression Model Descriptive Statistics:
The descriptive statistics show the detail statistics of all the variables whether they are the outcome (dependent) variable or the predictor variables (independent variables) including the mean, standard deviations and correlations among all the variables noting the relation among all the variables. In regression, there must be strong correlation between the outcome and the predictor variable so that the predictor variable best explains the outcome variable and there must be very weak correlation among the predictors, which is known as multicollinearity, which must be minimized to have the best regression results to predict the outcome.

3.12.1.1 Regression Model Summary
The regression model summary shows the effectiveness of the regression model by analyzing the following factors which are noted to identify the applicability of the model.

i) The R- square value of the regression model is noted to predict the fitness of the regression model, and higher the value of the R-square value the best the model fits and gives the accurate predictions about the effect of these variables on the dependent variable.
ii) The R value in the regression model gives the multi correlation coefficient between the outcome variable and the predictor variables, which determine the relation of the predictor variables with the outcome variable.

iii) The adjusted R-square value gives the notification of the generalization, which if the results can be generalized to the data outside the sample study, means if the results can be extended to the population. The closer the value of adjusted R-square with the R-square value means that the model can be extended to the population also.

iv) The F value of the regression model (Application of Anova) shows the variation explained by the regression model as compared to the most basic model that is predictions from the mean. The significant ANOVA (F value) shows the model is appropriate in predicting the outcome variable from the predictor variables.

v) Durbin- Watson Test: For the effectiveness of the regression model, the residual terms in the regression model must be uncorrelated to each other. The Durbin Watson test is used to check this collinearity of these error terms. The value of the Durbin Watson test ranges from 0-4 with the value of 2 means the residuals are uncorrelated, less than 2 means the positively correlated and greater than 2 means negatively correlated. So, for the effectiveness of the regression model, the value of the Durbin Watson test must be 2 or close to 2.

3.12.1.2 Generalization conditions for the regression Model:
The following conditions are seen for the generalization of the regression model to the population which extends beyond the sample data.

i) The variance of the predictor variables must be non zero.

ii) No perfect collinearity among the predictor variables: There must be not any perfect collinearity among the predictor variables.

iii) Homoscedasticity of the data: For the generalization of the regression model, the data must fulfill the condition of homoscedasticity that is the variance of the residuals must be same; if the variances of the residuals are not equal then the data has the heteroscedasticity. For checking the homoscedasticity of the data, the plots can be made between the standardized predictor values (ZPRED) on the x axis and the
standardized residuals (ZRESID) on the Y-axis. If the graph shape is distributed around the centre line, then the data fulfills the condition of homoscedasticity.

iv) Independent Errors: The residual terms must be uncorrelated; this is checked by the Durbin Watson test discussed already.

v) Normally Distributed Errors: The errors in the outcome variable must be normally distributed. The whole data may not be normal every time, but the errors in the outcome variable must be normal. This can be checked by seeing the normal histogram curve of the regression standardized residuals of the outcome variable, if it is normal bell shaped curve distributed around the mean then the errors are normally distributed and second through the normal P-P plots of the same standardized residuals and if all the points lie on the normal P-P plot, then it proves the normality condition.

3.12.2 Assessing the assumption of no multicollinearity

The following parameters are measured to check if there is collinearity in the data. Specifically, it provides the VIF (Variance Inflation Factor) and the tolerance statistics (with tolerance being 1 divided by the VIF). The following guidelines can be checked here:

i) If the largest VIF is greater than 10, then there is a cause of concern.

ii) If the average VIF is substantially greater than 1 then the regression may be biased.

iii) Tolerance below 0.1 indicates a serious problem.

iv) Tolerance below 0.2 indicates a potential problem.

If the above conditions are satisfied, then it is concluded that the there is no collinearity within the data.

1.12.3 Analyzing the individual regression coefficients of the predictor variables

The individual significant values of the t statistic of the regression coefficients determine if these variables affect the equity risk premium expectations of the investors, those variables which have the significant t value have the effect on the outcome variable and the coefficient determines the extent of how much that variable effects the equity risk premium expectations of the investors.
3.13 Chapter Schema for each objective
The research is divided into various chapters detailing each objective separately. Each chapter discusses the objectives one by one and gives the complete insight on that objective.

3.14 Data Interpretation & Report Presentation
Finally, the analyzed data gives the results and show the factors that affect the ERP expectations and the results are presented in the report and interpreted to aware the investors about the factors which they should take care of before investing in the capital market and to judge their own equity risk premium expectations according to their own risk appetite and financial constraints.