CHAPTER III

RESEARCH METHODOLOGY
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The research gap and the study problem identified in previous chapter need a systematic way of addressing, studying and analyzing in this chapter. Research methodology is the way through which the research problem identified by researcher is solved systematically. It involves the various steps that are adopted by a researcher in studying and analyzing the research problem along with the underlying logic and theoretical frame beneath it. As every research has its own way of studying the research problem using the tools of execution, research methodology explains the particular way in which the research problem has been addressed and studied by the researcher. A research problem needs to be studied on a sample for a time period through analysis of the data collected using appropriate methods. It provides detailed sample employed, time horizon, instruments of data collection, research variables and analytical tools employed in research. How the research is approached by the researcher, what methods are employed and why those methods are employed while studying the research problem are the some of the major questions which are addressed in a research methodology. This chapter of the study provides an overview of the prescribed way through which the research problem under study has been addressed in the research.

Sustainable and responsible growth is essence of the social and economical development. As a result of the rising need in the country to overcome social disparities and bring inclusive growth, growing social and ethical concerns among the stakeholders and corporate being the indispensable part of the social framework, the corporate social responsibility has emerged as a new trend in India. Corporate social responsibility requires undertaking social initiatives for the overall development of the society. The social initiatives thus conducted and reported by corporate India needs to be investigated and studied. As the social conduct of corporates is influenced by a number of factors, identifying the corporate characteristics that establish relationship with the social conduct is another aspect to look into. This is one dimension of the corporate social conduct in India which considers the social conduct being performed and influenced by the corporate characteristics. Another important dimension is the impact created by the social initiatives for which they were intended for. As every social initiative is undertaken to bring a desired impact in the society, the study of the impact of the social
conduct of corporate India is another important aspect to look into. On a whole, the social conduct and practice of corporate India, the factors influencing the social conduct and the assessment of the impact introduced by social conduct gives an overview of CSR practices in India. Therefore, the present study is rightly focused to investigate and study this phenomenon and is hence titled as the:

“Corporate Social Responsibility Practices in India: An Empirical Study”

3.1 Objectives of the Study
The following research objectives have been framed for the study of corporate social responsibility practices in India:

i) To study the corporate social conduct and reporting practices in India.

ii) To study the relationship between the ownership structure, industry groupings, corporate size and the social conduct of the corporate India.

iii) To study the relationship between the social performance and the corporate financial performance.

iv) To bring out a selective impact assessment of corporate social activities in India such as education, health, poverty alleviation etc.

3.2 Hypotheses of the Study
In order to study the above mentioned objectives, the following research hypotheses have been designed:

H_{01}: There is no significant difference between the social conduct across the categories of ownership structure,

H_{02}: There is no significant difference between the CSR expenditure across the categories of ownership structure,

H_{03}: There is no significant difference between the social conduct across the categories of corporate size,
H$_04$: There is no significant difference between the CSR expenditure across the categories of corporate size,

H$_05$: There is no significant difference between the social conduct across the categories of industry groupings,

H$_06$: There is no significant difference between the CSR expenditure across the categories of industry groupings,

H$_07$: There is no significant difference between the social conduct across the categories of financial performance,

H$_08$: There is no significant difference between the CSR expenditure across the categories of financial performance

These study hypotheses are precisely presented in the following pictorial form as below:

![Figure 3.1](image_url)

**Figure 3.1**
Study Hypotheses: A Pictorial Depiction
3.3 The Study Sample
As research gives generalized opinion on the results about the population on the basis of its sample, the sample should be a good representative of the population. The present research aims at studying the corporate social responsibility practices of corporate India, therefore the sample of the study should be good representative of corporate India. The sample of the study comprised Nifty 100 index which represented top 100 companies based on full market capitalisation. Nifty 100 index represented about 77% of free float market capitalisation of stocks listed on NSE as on March 31, 2016. It can thus be said that the sample of the study was good representative of corporate India and it would be apt to study the corporate social responsibility practices of corporate India on the basis of this sample.

3.4 The Study Period
Corporate India is not new to social responsibility. Many social initiatives have been undertaken by corporate India ever since its inception whether it is in the form of donations or institutionalization of philanthropic trusts. However, the concept gained prominence when the concept of corporate social responsibility was introduced in the Companies Bill, 2011 which mandated the constitution of a corporate social responsibility committee and two percent profit spending on CSR by every company with an annual turnover of Rs. 1,000 crore and more, or net worth of Rs. 500 crore and more, or net profit of Rs. 5 crore and more. The bill was passed by Lok Sabha on December 18, 2012 as the Companies Bill, 2012 which further got the approval of Rajya Sabha on August 8, 2013 and the President’s consent on August 29, 2013 and then became the Companies Act, 2013. The provisions of the CSR within the Act were enforceable with effect from April 1, 2014. Hence, the time period of the study was 2011-15 which included five years ranging from the year of introduction of corporate social responsibility in the bill to preparedness, adaptation and adjustment by the corporations for the same and then to the implementing year of the Act.

3.5 The Data Sources and Instrument
The data collection sources of the study included company annual reports, Capitaline database, the Reserve Bank of India database and the twitter. As the organizations use annual reports as a medium of communicating the corporate information, the corporate social responsibility initiatives undertaken by the companies are disclosed in the annual reports.
Thus, in order to study the social conduct and practices of corporate India, data was collected from the annual reports of the sample companies for the period 2011-15 using an index containing hundred statements on six corporate social responsibility dimensions. The financial performance data of the sample companies was collected from the Capitaline and the Reserve Bank of India database. And in order to study the impact assessment of corporate social initiatives, data was collected from the social networking site, the twitter. This data set had its own limitations. As after 2012 GlaxoSmithKline Consumer Health Care reported its annual report directly in 2014 for fifteen months, the sample for the year 2013 was ninety nine in this study. Similarly as Bosch Limited and GlaxoSmithKline Pharmaceutical reported their annual reports directly in 2015 for last fifteen months, the sample for the year 2014 was ninety eight in this study. Also, as Eicher Motors reported its annual report directly in 2016 for last fifteen months, the sample for the year 2015 was ninety nine in the study.

In order to study the impact assessment of corporate social initiatives, tweets were searched and collected from the social networking site twitter. The name of the sample companies along with the key words was searched on twitter to collect the tweets. The key words include education, Sarva Shiksha, skill India, livelihood, training, mid day, hunger, poverty, nutrition, hygiene, drinking water, healthcare, blood donation, sanitation, Swachh Bharat, clean India, women empowerment, gender equality, women enterprise, women employees, self help, environment sustainability, waste management, water conservation, climate change, solar, renewable, carbon, green, biodiversity, tree, saplings, rural, village, inclusive, disaster, relief, flood, drought, sports, heritage, art and culture. Also, the tweets collected were 2012 onwards till August 1, 2016.

In order to study the social conduct of the corporations in India, an attempt was made to index the corporate social conduct keeping into consideration the related provisions of the New Companies Act, 2013 and the socio-economic development and environmental initiatives that have been taken up by the Indian government in the recent times in this regard. The index (Annexure-B) designed was used to collect inputs from the annual reports of the sample companies on the CSR conduct. The index contained hundred statements categorized on the basis of six identified themes of corporate social responsibility namely i) socio-cultural development and inclusive growth, ii) promotion of literacy, employability and sustainable livelihood, iii) promotion of healthcare, hygiene and sanitation, iv) promoting
environmental sustainability and ecological balance, v) ethical, moral and transparent governance and vi) promoting healthy employee relations at the workplace.

3.6 Research Variables defined

The following research variables form part of the study:

i) Corporate social responsibility performance

Corporate social responsibility performance was measured in terms of the social actions conducted by an organization and the expenditures made towards the same. In order to study the corporate social conduct of the sample companies, a CSR conduct score was computed using the CSR information from the annual reports. All the vital information and therefore the social initiatives undertaken by corporations are disclosed in the annual reports. As the information disclosed in the annual reports is representation of the corporate action, so is the CSR information disclosed the representation of social actions and conduct of corporate India. Thus, the corporate social responsibility conduct of the sample companies was measured in the terms of CSR conduct score computed on the basis of companies’ disclosure in the annual reports on the statements of the index framed. In case where a company had disclosed a statement of the index in the reports was awarded a score of one and if it do not it was awarded a score of zero. Such as, if a company disclosed its initiative to strengthen quality education, then it was given a score of one otherwise zero. As the index contained hundred statements on six identified themes of corporate social responsibility, each sample company’s CSR conduct score was out of hundred assuming each item of disclosure to be equally important. Thus, the study computed CSR conduct score of hundred companies for the period 2011-15, using the index framed containing hundred statements.

ii) Ownership structure

The ownership structure of a company is represented in its shareholding pattern. The majority of the shares possessed by a group are said to be having its ownership. On the basis of the ownership pattern of the sample companies as on March 31, 2016, the sample companies’ categorization was done as:
a) Government owned entities

When promoter group of a company consisted of central/state government as the holder of more than fifty percent of the shareholding, then it was categorized as a government owned entity.

b) Foreign owned entities

When foreign promoter group including individuals, corporate, institutions and investors owned more than fifty percent of the shareholding of a company, then it was categorized as a foreign owned entity.

c) Public owned entities

When shareholders other than promoters such as bodies corporate, individuals, financial institutions, venture capital funds, insurance companies, non banking financial companies and the like owned more than fifty percent of the shareholding of a company, then it was categorized as a public owned entity.

d) Family/Corporate owned entities

When promoter group including individuals, corporate bodies, Hindu Undivided Families, partnership firms and the like owned more than fifty percent of the shareholding of a company, then it was categorized as family/corporate owned entity. Also when in the shareholding pattern of a company, neither foreign and Indian promoter group nor non promoter group owned more than fifty percent, but the Indian promoter group together with non promoter group owned more than fifty percent of the shareholding, then also it was categorized as family/corporate owned entity. Thus, when the Indian promoter group of a sample company including individuals, corporate bodies, Hindu Undivided Families, partnership firms and the like either individually or together with non promoter group owned more than fifty percent of the shareholding of a company, then it was categorized as family/corporate owned entity.

Table 3.1 shows the categorization of the sample companies on the basis of the ownership structure along with the count and the sample description for each category.
Table 3.1  
Categorization of the Sample Companies on the Basis of Ownership Structure

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Ownership Structure</th>
<th>Number of Companies</th>
<th>Sample Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Government owned entities</td>
<td>20</td>
<td>Bank of Baroda, Bharat Electronics, Bharat Heavy Electricals Limited, Bharat Petroleum Corporation, Coal India, Container Corporation of India, Gail (India), Hindustan Petroleum Corporation, Indian Oil Corporation, NHPC, NMDC, NTPC, Oil &amp; Natural Gas Corporation, Oil India, Power Finance Corporation, Power Grid Corporation of India, Punjab National Bank, Rural Electrification Corporation, State Bank of India, Steel Authority of India</td>
</tr>
<tr>
<td>ii)</td>
<td>Foreign owned entities</td>
<td>18</td>
<td>ABB India, Ambuja Cements, Ashok Leyland, Bosch, Britannia Industries, Castrol India, Colgate-Palmolive (India), Cummins India, Dabur India, Glaxosmithkline Consumer Healthcare, Glaxosmithkline Pharmaceuticals, Hindustan Unilever, Maruti Suzuki India, Oracle Financial Services Software, Procter &amp; Gamble Hygiene &amp; Health Care, Siemens, United Spirits, Vedanta</td>
</tr>
<tr>
<td>iii)</td>
<td>Public owned entities</td>
<td>33</td>
<td>Apollo Hospitals, AXIS Bank, Bajaj Auto, Bharat Forge, Cipla, Dr. Reddy's Laboratories, Glenmark Pharmaceuticals, Grasim Industries, HDFC Bank, Hero MotoCorp, Hindalco Industries, Housing Development Finance Corporation, ITC, ICICI Bank, Idea Cellular,</td>
</tr>
<tr>
<td>iv) Family/Corporate owned entities</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------</td>
<td>----</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### iii) Industry groupings

Industry groupings refer to the classifications of the companies that were associated on the basis of their primary business activities. The implementation of the social and environmental responsibilities differs among industrial groupings such as manufacturing companies face high pressure for environmental improvement and accountability as compared to the trading and service concerns. Table 3.2 shows the categorization of the sample companies on the basis of the industry groupings along with the count and the sample description for each category.
Table 3.2
Categorization of the Sample Companies on the Basis of Industry Groupings

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Industry Groupings</th>
<th>Number of Companies</th>
<th>Sample Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Automobile</td>
<td>09</td>
<td>Ashok Leyland, Bajaj Auto, Bosch, Eicher Motors, Hero MotoCorp, Mahindra &amp; Mahindra, Maruti Suzuki India, Motherson Sumi Systems, Tata Motors</td>
</tr>
<tr>
<td>iii)</td>
<td>Healthcare and Pharmaceutical</td>
<td>11</td>
<td>Apollo Hospitals Enterprise, Aurobindo Pharma, Cadila Healthcare, Cipla, Divi’s Laboratories, Dr. Reddy’s Laboratories, Glaxosmithkline Pharmaceuticals, Glenmark Pharmaceuticals, Lupin, Sun Pharmaceutical Industries, Torrent Pharmaceuticals</td>
</tr>
<tr>
<td>v)</td>
<td>Energy</td>
<td>13</td>
<td>Bharat Petroleum, Cairn India, Castrol India, GAIL (India), Hindustan Petroleum, Indian oil Corporation, NHPC, NTPC, Oil &amp; Natural Gas Corporation, Oil India, Power Grid Corporation of India, Reliance Industries, Tata Power</td>
</tr>
<tr>
<td>vi)</td>
<td>Cement, Construction and Infrastructure</td>
<td>14</td>
<td>ABB India, ACC, Ambuja Cements, Bharat Electronics, Bharat Forge, Bharat Heavy Electricals Limited, Cummins India, DLF, Grasim Industries, Larsen &amp; Toubro, Shree Cement, Siemens, UPL, UltraTech Cement</td>
</tr>
<tr>
<td>vii)</td>
<td>Consumer goods and Services</td>
<td>17</td>
<td>Adani Ports and Special Economic Zone, Asian Paints, Britannia Industries, Colgate-Palmolive (India), Container Corporation of India, Dabur India, Emami, Glaxosmithkline Consumer Healthcare, Godrej Consumer Products, Hindustan Unilever, ITC, Marico, Pidilite Industries, Procter &amp; Gamble Hygiene &amp; Health Care, Titan Company, United Breweries, United Spirits</td>
</tr>
<tr>
<td>viii)</td>
<td>Metals and Mining</td>
<td>08</td>
<td>Coal India, Hindalco Industries, Hindustan Zinc, JSW Steel, NMDC, Steel Authority of India, Tata Steel, Vedanta</td>
</tr>
</tbody>
</table>
iv) Corporate Size

As the sample companies of the study were the hundred largest companies in terms of market capitalisation, still an attempt was made to sub classify the sample in three convenient classes for analytical perspective. Investors care about the corporate size as it helps them to determine the investment risk. Large sized organizations are assumed to have less risk as compared to the smaller ones. The size of a corporation can be measured in terms of total assets, total sales, number of employees, market capitalisation, capacity of plants, net worth, capital employed and the like. As market capitalisation tells the value and actual worth of the company in the market, it is more helpful for investor to take investment decisions. The study employed market capitalisation as a measure to categorize the sample companies on the basis of corporate size. Table 3.3 shows the categorization of the sample companies on the basis of market capitalisation as on March 31, 2016 along with the count and the sample description for each category.

**Table 3.3**

*Categorization of the Sample Companies on the Basis of Corporate Size*

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Corporate Size</th>
<th>Market Capitalisation</th>
<th>Number of Companies</th>
<th>Sample Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Small Cap</td>
<td>Less than Rs. 250 Billion</td>
<td>22</td>
<td>Apollo Hospitals Enterprise, Bharat Forge, Castrol India, Colgate-Palmolive (India), Container Corporation of India, Cummins India, Dabur India, Emami, Glenmark Pharmaceuticals, Hindalco Industries, Larsen &amp; Toubro, Oil India, Power Finance Corporation, Procter &amp; Gamble Hygiene &amp; Health Care, Punjab National Bank, Reliance Communications, Rural Electrification Corporation, Shriram Transport Finance, Tata Motors,</td>
</tr>
<tr>
<td>Medium Cap</td>
<td>Between Rs. 250 and 500 Billion</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------</td>
<td>----</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Large Cap</th>
<th>More than Rs. 500 Billion</th>
<th>38</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adani Ports and Special Economic Zone, Asian Paints, AXIS Bank, Bajaj Auto, Bharat Petroleum Corporation, Bharti Airtel, Bharti Infratel, Bosch, Coal India, Dr.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
v) Financial Performance: Indicators and Categorization

The financial performance of a company can be measured using number of financial indicators such as short term solvency ratios, activity ratios, profitability ratios and capital structure ratios. As the Companies Act, 2013, has mandated the corporate social responsibility for the companies on the basis of turnover, net profits and net worth requirement, it will not be appropriate to take such ratios as the indicators of financial performance in the study and then find its association with the social performance. Also, as the financial performance indicators vary between the financial companies and the non-financial companies, the indicators were set accordingly. Eighty three non-financial services companies and seventeen financial services companies formed the part of the sample.
The tendency of financial distress is rising in India. According to a report of India Ratings & Research agency, out of the country’s five hundred largest listed non-financial companies; one third were stressed as these failed to earn enough to make interest payments in the financial year 2015. Indian financial sector has also been struggling with the rising stressed assets and weaker earnings. According to the Reserve Bank of India Financial Stability report, 2016, the risks to the Indian banking sector have increased on account of low profitability and deterioration in the asset quality. Keeping this into consideration the financial performance indicators for the study were identified. The financial performance indicators of non-financial companies were debt equity ratio, interest coverage ratio, earnings before interest and tax (EBITA) margin and return on equity and the financial performance indicators of financial companies were capital adequacy ratio, net interest margin, net non performing assets to net advances ratio and the return on equity.

In order to study the relationship between the social and financial performance, the sample companies were categorized on the basis of the financial performance into three categories namely; excellent financial performance, good financial performance and moderate financial performance. The companies which satisfied the set benchmark of all the four financial indicators were put in first category of excellent financial performance, which satisfied the benchmark of any three financial indicators were put in second category of good financial performance and the companies which satisfied the benchmark of any one or the two financial indicators were put in third category of moderate financial performance. Discussed below are some details about the financial indicators along with the benchmark set for each:

a) Debt equity ratio

Debt equity ratio is the proportion of the borrowed funds to the owned funds in an organization. It is a measure of the relationship between the capital contributed by outsiders and the capital contributed by shareholders and thus is an important indicator to assess whether the company is moving into or out of the debt. The ratio was computed as:
Total debt / (Share capital + Reserves)

Though there is no rule of thumb or standard debt equity ratio, the benchmark for the study was set as 2:1 i.e. if the company’s debt equity ratio for a particular year was less than 2:1 then it was considered to be satisfying the benchmark else not.

b) Interest coverage ratio

Interest coverage ratio of an organization determines its debt serving capacity. It measures how many times over a company could pay its interest out of the available earnings. The ratio thus measures the sufficiency of earnings before interest and tax to service debt in future and the degree of protection creditors have from default on the payment of interest by the company. The ratio was computed as:

\[
\frac{(\text{Adjusted net profit} + \text{tax} + \text{interest})}{\text{Interest}}
\]

Though there is no rule of thumb or standard interest coverage ratio, the benchmark for the study was set as 2:1 as it was presumed that the current earnings before interest and taxes should be at least double the interest component in order to serve the debt effectively.

c) Earnings before Interest and Tax (EBITA) margin

EBITA margin is a measure of an organization’s operating profitability as a percentage of its total revenue. It represents the earnings a company makes purely on its operations without regard for the costs of financing and taxes and was computed as:

\[
\frac{(\text{Earnings before Interest and Tax} / \text{Total Income})}{100}
\]

There is no rule of thumb for the EBITA margin. Higher the margin better it is as it means that operating expense eat less into the company’s earnings and thus making it a more profitable operation. According to the Dun & Bradstreet’s overview of the top five hundred Indian companies, the EBITA margin for the year 2010 stood at 25.7%. As the time period of the study was 2011-15, 25.7% was set as benchmark i.e. if the
company’s EBITA margin for a particular year was greater than 25.7% then it was considered to be satisfying the benchmark else not.

d) Return on equity (ROE)

Return on equity measures how effectively shareholder’s funds are being utilized by the organization and the return which it is realizing from the shareholder’s equity. It reflects profitability of the company by measuring the investor’s return and was computed as:

\[
\frac{(\text{Adjusted net profit} - \text{preference dividend})}{(\text{Equity paid up} + \text{reserves})} \times 100
\]

There is no standard ratio for the return on equity. Higher the return better it is as it means that the shareholder’s funds are being effectively utilized to generate returns. According to an article in Outlook Business Magazine titled ‘The return of bad times’, the return on equity of SENSEX dipped to fifteen percent in the year 2010. Also, according to an article dated April 1, 2016, in The Economic Times titled ‘What is the importance of ROE for investors’, the return on equity less than fourteen percent is not considered satisfactory. Thus, the ROE benchmark in the study was taken at fifteen percent i.e. if the company’s ROE for a particular year was greater than fifteen percent then it was considered to be satisfying the benchmark else not.

e) Capital adequacy ratio

Capital adequacy ratio is the measure of a bank’s capital in relation to its risk weighted assets. It measures a bank’s risk of insolvency from excessive losses and was computed as:

\[
\frac{(\text{Tier I capital} + \text{Tier II capital})}{\text{Risk Weighted Assets}}
\]

In order to ensure that the banks have sufficient capital to immune its losses emerging from the risks in its business, banking regulators decide a capital adequacy ratio. Basel III norms stipulated a capital adequacy ratio of eight percent, however as per RBI norms, Indian scheduled commercial banks and non banking financial companies are required to maintain capital adequacy ratio of nine percent and fifteen percent
respectively. Thus, the study had set capital adequacy ratio benchmark of nine percent for the commercial banks and fifteen percent for the non banking financial companies in the sample i.e. if a bank and a non banking financial company had capital adequacy ratio greater than nine percent and fifteen percent respectively for a particular year then it was considered to be satisfying the benchmark else not.

f) **Net interest margin**

Net interest margin is a measure of how effectively the organization deploys its funds to generate income from the investment and credit operations. It is measured as the excess of interest income over interest expense scaled by the total asset:

\[
\frac{(\text{Investment Returns} - \text{Interest Expenses})}{\text{Interest Earning Assets}}
\]

There is no standardized ratio for the net interest margin but higher the margin better it is as it shows the success of the organization’s investment decisions. According to the Reserve Bank of India annual report 2010-11, the net interest margin of the scheduled commercial banks and non banking financial companies stood at 2.7% and 3.9% respectively in 2010. Thus, these figures were taken as the benchmark in the study i.e. if the net interest margin of a sample bank and non banking financial company was greater than 2.7% and 3.9% respectively for a particular year then it was considered to be satisfying the benchmark else not.

g) **Net Non Performing Assets (NPA) to Net Advance ratio**

An asset becomes non-performing when it stops generating income for the bank. The net NPA to net advance ratio is an important indicator of financial health of the banks and measures the comprehensive quality of the bank’s loan book. It represents the asset quality, efficacy in resource allocation and credit risk management of the banks and was computed as:

\[
\frac{\text{Net non-performing assets}}{\text{Net advances}}
\]

There is no standardized net NPA to net advances ratio but lower the ratio better it is as higher net NPA ratio represents high value of low quality loans in the bank’s loan
book. According to the Reserve Bank of India database, the average net NPA to net advance ratio of the scheduled commercial banks from 2001-10 stood at 2.6% and according to the Reserve Bank of India, 2010 publication on non-banking financial companies, the average net NPA to net advance ratio of the non-banking financial companies from 2001-10 stood at 1.35%. Thus, these figures were taken as the benchmark in the study i.e. if the net NPA to net advance ratio of a sample bank and non-banking financial company was less than 2.6% and 1.35% respectively for a particular year then it was considered to be satisfying the benchmark else not.

3.7 Analytical tools

Following analytical tools were used in the study under consideration for analysis of data to obtain the results in relation to the study objectives and the hypotheses identified:

i) Content analysis

In order to study the corporate social responsibility conduct of the sample companies, the study examined the CSR information presented in the annual reports through content analysis. This method of data analysis has been widely used in prior research in the area of corporate social responsibility. Many researchers across the globe used content analysis in their respective studies related to corporate social responsibility such as Zain (1999), Ahmad et al. (2003), Thompson and Zakaria (2004), Gao et al. (2005), Murthy (2008), Chen and Bouvain (2009), Gautam and Singh (2010), Zakaria and Dewa (2010), Islam et al. (2011), Lungu et al. (2011), Dong et al. (2012), Bashtovaya (2014), Sommer et al. (2015) and Usram and Amran (2015).

Content analysis can be defined as “a research technique for making valid and replicable inferences from data according to their context” (Krippendorff, 1980). It provides new insights, knowledge, a representation of facts and a practical guide to action. The simplest way of content analysis is the detection of presence and absence of the social responsibility information. But this form does not allow measuring the extent of disclosure of social information and the emphasis of information. Thus, the present study used content analysis to extract and analyze information about CSR initiatives from the annual reports of the sample companies using a scoring system. In case where a company
disclosed a statement of the index framed, it was awarded a score of one otherwise zero. If the same information was explained in more than one place, it was counted only once. Where a disclosure contained information about more than one theme of the index it was counted as belonging to both the themes. The use of such a system affirmed that the score a company received was for the relevant disclosures and initiatives undertaken. Assuming each statement of the index i.e. each item of disclosure to be equally important the total CSR conduct score for the sample companies was computed by adding the company’s individual scores on each statement of the index thus making every company’s score count out of hundred. Thus, through content analysis as the technique the disclosure data was extracted from the annual reports of the sample companies using index framed as the instrument.

ii) Analysis of Variance

Analysis of Variance (ANOVA) is a statistical tool used to analyze situations in which we want to compare more than two conditions (Andy Field, 2013). When there is one metric dependent variable and one non-metric (categorical) independent variable with more than two categories and in order to compare that whether the mean of dependent variable is significantly different across the categories of independent variable, one way ANOVA is applied. The assumptions of ANOVA are that the dependent variable is normally distributed for each group of independent variable and the variances in the dependent variable are equal across groups. The assumption of equal variance across groups is tested using Levene’s test. If Levene’s test is significant (i.e., the p-value is less than .05), then it indicates that the variance among the categories is not same. In this case an adjustment to F-test/ANOVA is used i.e. Welch’s F test (Andy Field, 2013).

One-way ANOVA and Welch F test were used to determine whether there were any significant differences between the means of two or more independent groups. It compares the means between the independent groups and determines whether any of those means are significantly different from each other. It thus tests the null hypothesis which states that there is no significant difference between the group means and while testing these differences F-ratio is used. F-ratio compares systematic variance to the unsystematic variance i.e. how good the model is compared to how bad it is. If F-ratio
gives a significant result, the null hypothesis is rejected and alternate hypothesis is accepted, which states that there are at least two group means that are significantly different from each other. But ANOVA/Welch test does not specifies which group means are significantly different from each other. It is therefore necessary that after conducting ANOVA/Welch test, post hoc analysis is carried out further to find out which groups means differ significantly. Post hoc analysis consists of pairwise comparisons that are designed to compare all different combinations of the treatment groups. There are large number of post hoc tests such as LSD, Bonferroni, Tukey, Duncan, Gabriel and Scheffe in case of equal variance assumed and Tamhane’s T2, Dunnett’s T3, Games–Howell and Dunnett’s C in case of equal variances not assumed. Many statisticians recommend Tukey and Games-Howell test for the post hoc analysis (Morgan et al., 2004). Post hoc analysis displays for each pair of groups the difference between group means for the different combinations of groups, the standard error of that difference, the significance level of that difference and a ninety five percent confidence interval. Post hoc analysis was performed in this study only when statistics of ANOVA/Welch test showed significant difference between group means.

A measure of the strength of the association between the dependent and independent variable in ANOVA/Welch test is $\omega^2$, omega squared. Omega squared indicates the proportion of the total variance in the dependent variable that is accounted for by the independent variable. In case of ANOVA, omega squared is calculated as:

$$\omega^2 = \frac{SS_{Between} - (df_{Between} * MS_{Within})}{SS_{Total} + MS_{Within}}$$

Where $SS_{Between}$= Sum of square between groups, $MS_{Within}$= Mean sum of square within groups, $SS_{Total}$= Total amount of variance, $df_{Between}$= Degree of freedom between groups.

And in case of Welch test, omega squared is calculated as:

$$\omega^2 = \frac{df_{Between} *(F-1)}{df_{Between} *(F-1) + N_T}$$

Where $df_{Between}$= Degree of freedom between, $F$= Welch’s F statistic, $N_T$= Sample. It has been suggested that omega squared values of .01, .06 and .14 represent small, medium and large effects, respectively (Kirk, 1996).
The present study aimed to study the relationship between social conduct and ownership structure, industry groupings, corporate size where social conduct was the dependent variable and remaining were the independent variables. As the independent variables had more than two categories each, thus in order to find whether mean social performance varied across the categories of independent variable, ANOVA/Welch’s F test and post hoc analysis was applied. The test had been conducted on 95% confidence means 5% significance level. Thus, the probability value of significance should be less than 0.05 to make a variable significant. The degree of association between the social performance and the independent variables was computed using omega squared. PASW (Predictive Analytics SoftWare) Statistics version 18 was used for conducting the same.

iii) Multiple Regression Analysis

While fitting a linear model to our data and using it to predict the values of an outcome variable (dependent variable) from one or more predictor variables (independent variables), regression analysis is the fit case. Multiple regression analysis was applied as there were several predictors in the study. The results of regression analysis provide the summary of the model containing values of R, R squared ($R^2$), Adjusted R squared, ANOVA results, the coefficients and their corresponding significance. R value represents the correlation between independent and dependent variables. It is a measure of the strength of the linear relationship between dependent and independent variables and thus represents how well the regression equation fits the data. Stronger the correlation better is the prediction. $R^2$ also known as coefficient of determination represents the proportion of variation in dependent variable explained by the independent variables. Higher the $R^2$, better the variance in dependent variable is explained by the independent variable. $R^2$ is poor if it ranges between 0.0 to 0.3, it is moderate, if it ranges between 0.3 to 0.7 and it is good, if it ranges between 0.7 to 1. The adjusted $R^2$ tells how well the model generalizes. Ideally its value should be the same or very close to the value of $R^2$. Let’s say there is difference between the values of $R^2$ and adjusted $R^2$ of 0.5% ($0.665 - 0.660 = 0.005$). This means that if the model was derived from the population rather than a sample it would account for approximately 0.5% less variance in the outcome.
The ANOVA results tell whether the overall model results in a significantly good degree of prediction of the outcome variable. A significant F-test indicates that the observed $R^2$ and relationship between the response variable and the set of predictors is statistically reliable. However, the ANOVA doesn’t tell about the individual contribution of variables in the model. This is known with the help of values of regression coefficient $B$ and their corresponding $t$ ($t$-value= $B$ value/standard error) and the significance values. $B$ values indicate the size of the effect that each independent variable is having on dependent variable or how much the dependent variable is expected to increase when the independent variable increases by one.

The present study aimed to study the relationship between corporate financial performance and the social performance. In order to study whether the corporate financial performance affected the social performance; corporate size was considered as the control variable, corporate social performance as dependent variable and dummy variables of financial performance categories were taken as independent variables. As there were three financial performance categories namely excellent financial performance, good financial performance and moderate financial performance, dummy variables were the two. The study looked for comparing the companies with excellent financial performance against the companies with good and moderate financial performance; the base line category was taken as excellent financial performance and was given a code of 0. For first dummy variable; $d_1$ of good financial performance group, the companies which had good financial performance were given a code of 1 and everyone else a code of 0. Similarly, for second dummy variable; $d_2$ of moderate financial performance group, the companies which had moderate financial performance were given a code of 1 and everyone else a code of 0. In PASW (Predictive Analytics SoftWare) Statistics version 18, regression analysis was run to study the association between corporate social and financial performance taking corporate size as control variable:

$$\text{Social performance} = \text{Constant} + b_1 (d_1) + b_2 (d_2) + b_3 (\text{Corporate size})$$

Wherein,

Constant=Mean of base category in presence of control variable

$d_1$= dummy variable of good financial performance category,
d_2 = dummy variable of moderate financial performance category and 
b_1, b_2, b_3 are regression coefficients / B values

As the predictor was made up of groups, the predicted values will be the group mean because for a given individual, the best guess of their score will be the mean of the group to which they belong (Andy Field, 2013). Hence, the intercept was the mean of the base category and B values of dummy variables represented the difference between each group means and the group that we had chosen as a baseline category. This B value was converted to a t-statistic and the significance of this t was reported. T-statistic tests whether the difference between group means is 0. If it is significant (Sig value < 0.05) then the group coded with 1 is significantly different from the baseline category else not. That is if the B values of dummy variables were insignificant this implied that there was no significant difference between group means and hence the independent variable was said to be not significantly associated with the dependent variable.

iv) Twitter Sentiment Analysis

In order to study the impact assessment of corporate social activities in India, the study had conducted twitter sentiment analysis. Although the impact of corporate social activities can be highly assessed by conducting surveys and addressing the beneficiaries of social initiatives, but because of time and costs constraints it was not feasible to conduct the same in the study and hence it made use of the social media analytics which is another popular platform for the beneficiaries to express their opinions and sentiments these days.

Twitter sentiment analysis is a technique of social media analytics. The social media analytics is the method of monitoring, analyzing and interpreting the data collected from social media websites in order to review and improve the effectiveness of decision making processes. Since the social media content is unstructured textual data, the techniques used for social media analytics focuses on the unstructured nature of the data such as text analytics and sentiment analysis. The present study employed sentiment analysis as the technique of social media analytics. Sentiment analysis implies extracting
opinions, emotions and sentiments from the data which may be a sentence, tweet, SMS message, customer review and so on. In order to know whether the writer of a tweet, post, message and review possesses positive, negative or neutral attitude towards the topic one is writing, sentiment analysis is used.

People active on social media keep on sharing their views, opinion and emotions about the social changes that they observe in the society as a result of the social initiatives taken by the corporations using blogging, micro blogging and social networking sites. A micro blogging service enables its users to send and publish short messages of one hundred and forty characters at the most. It provides an environment in which people speak their opinions and thoughts and twitter is most popular micro blogging platform in India. In order to bring out the impact assessment of the corporate social activities undertaken by the sample companies, sentiment analysis was conducted on the tweets collected for the same. Twitter sentiment analysis is thus mining of the opinions, emotions and sentiments of the people expressed in the form of tweets. It identifies the positive, negative or neutral tones embedded in the content. The study conducted twitter sentiment analysis using Semantria Excel plug-in which enables sentiment analysis processing in Microsoft Excel.

Sentiment analysis company Lexalytics owns Semantria. Semantria Excel plug-in is a tool that provides sentiment and text analytics in Excel. The Semantria Excel plug-in runs an automated sentiment analysis of the dataset based on algorithms developed to extract sentiment. The extraction of sentiments in a document follows certain steps. Firstly, the document is broken into parts of speech (POS) tags, then the algorithm recognizes sentiment bearing phrases and logarithmic scale from -10 to 10 scores each sentiment bearing phrase. The scores are then combined to determine overall sentiment. Through these statistical inferences, each tweet is tagged with a sentiment polarity which is a verbal representation of the sentiment i.e. positive, negative or neutral and a sentiment score which is numerical representation of the sentiment polarity ranging from -2 to 2. In this way sentiment analysis is performed in Semantria Excel-plug in.
3.8 Chapterisation Scheme
The chapter plan of the study was so designed that the whole study is comprehensively covered in seven chapters. The chapter plan is as follows:

Chapter I: Introduction
Chapter II: Review of Literature
Chapter III: Research Methodology
Chapter IV: CSR Conduct and Practices of Corporate India
Chapter V: Corporate Social Performance: An Analytical Framework
Chapter VI: CSR Analytics and the Impact Assessment
Chapter VII: Study Findings, Conclusion and Policy Implications
References


