CHAPTER III

DATABASE AND RESEARCH METHODOLOGY

This chapter discusses the universe of the study, sample selection, techniques of data collection, statistical tools used in the analysis of data, hypotheses and the definitions of various variables used in this study.

For the purpose of the first objective of the study (i.e. to analyse and compare International, Indian and other standards on intangible assets worldwide) International Accounting Standard-38 on intangible assets (under IFRS), Accounting Standard 26 (under Indian GAAP), Statement of Financial Accounting Standards No. 142 (under US GAAP), Financial Reporting Standard-10 (under UK GAAP) and Accounting Standard for Business Enterprises No.6 (under Chinese GAAP) have been compared. IFRS has been used as a yardstick for this comparison, as most of the countries are harmonising their national accounting practices with IFRS. All accounting standards were assessed online and were compared on the basis of their definition, initial recognition, measurement of acquired intangible assets, measurement of internally generated intangible assets, subsequent measurements, amortisation, impairment, retirement and disposals of intangible assets, treatment of research and development expenditure.

For the purpose of the second, third and fourth objective the database and research methodology has been discussed in the following sections.

3.1 UNIVERSE OF THE STUDY AND SAMPLE SELECTION

BT-500 private sector companies rated on the basis of their market capitalization constitute the universe of this study (BT-500 companies, Business Today, Special issue- November 29, 2007).

The following filters were applied to select the sample:

I. The companies whose annual reports were not available for the years 2003-04 and 2007-08 were not considered.
II. The companies not existing in PROWESS database of CMIE (Center for Monitoring Indian Economy) were eliminated.

III. The companies whose financial year ends other than on March 31 and December 31, 2004 and 2008 were also eliminated.

Thus, as a result of these filters, a sample of 243 companies was selected and studied for the years 2003-04 and 2007-08 to measure the extent of intangible assets disclosure.

To compare the extent of intangible assets disclosure in Indian and UK based companies, information was sorted from annual reports of 100 UK companies listed on London Stock Exchange which is part of FTSE-100 (index on London Stock Exchange) as on 23 June, 2008. From the population of 100 companies, 92 were selected and studied depending upon the availability of their annual reports for the year ending 31 Dec, 2007.

3.2 DATA SOURCE

The source of data is annual reports. Annual reports are considered to be most widely distributed and regularly produced document which influences investors’ decisions. A company annual report is a mean by which it tries to convey its image to the public (Goh & Lim, 2004). First of all, the management of respective companies was requested to send the annual reports for the years 2003-04 and 2007-08. Most of the companies did not respond. Then other companies were contacted through their respective websites. EDIFAR dataset of annual reports set out by SEBI was also used as a source of data collection. The reason for selecting years 2003-04 and 2007-08 is that year 2003-04 was the first year for the mandatory application of Accounting Standard-26 on intangible assets and 2007-08 was the recent year and the availability of annual report was easier. For UK based companies annual reports for the year 2007-08 were obtained from their respective web sites.

The data related to corporate specific attributes for the two financial years has been retrieved from PROWESS database of CMIE (Center for monitoring Indian economy).
3.2.1 Collection of Data

To measure the level of intangible assets disclosure for sample companies, a content analysis was performed on their annual reports. Content analysis as a technique for gathering data, involves codifying qualitative and quantitative information into pre-defined categories in order to derive patterns in the presentation and reporting of information (Guthrie et al, 2004). Content analysis as a research method has been used in studies from Australia (Guthrie & Petty, 2000; 2006) Ireland (Brennan, 2001), Sweden (Olsson, 2001), South Africa (April el al, 2003), Italy (Bozzolan et al, 2003), Malaysia (Goh & Lim, 2004), Spain (Oliveras & Kasperskaya, 2005; Meca & Martinez, 2005), Netherland (Vergauwen and Alem, 2005), Portugal (Oliveira et al, 2006), Hong Kong (Carlin et al 2006), Australia (Sujan & Abeysekera, 2007), New Zealand (Steenkamp, 2007).

For this study content analysis of the annual report of each of the 243 companies selected in a sample involved the following steps:

- Preparation of Intangible assets disclosure index based on the Intangible assets Framework as given by Sveiby (1997) and as used and tested by Guthrie and Petty (2000) and many other subsequent studies which followed Guthrie and Petty framework. It was modified in Indian context. It comprises of 29 attributes in five main categories (Appendix 1).

- Reading the annual report to find out the disclosure of intangible assets information reported by a company.

- Some of the decision rules used for highlighting and classification of intellectual capital information are:
  - Sentences were used as recording unit since they are viewed to be the most reliable and complete unit of analysis (Milne & Adler, 1999);
  - Content analysis was performed on entire annual report;
  - If reporting of the same attribute was repeated in the annual report it was recorded only once; and
  - Some concepts are broad so their meaning was scored rather than use of exact words.
Each attribute of disclosure has been considered equally important. This is because the focus of study is not on any particular user group rather on all the users of corporate annual reports.

The intangible assets information was assigned scores (0 or 1 or 2) on the basis of its qualitative or quantitative nature which is given in table 3.1 below. A score of ‘0’ is used if an attribute does not appear in the annual report; a score of ‘1’ was given if an attribute appeared in qualitative/descriptive format; and a score of ‘2’ was assigned if an attribute is disclosed in quantitative form. The heavier weighting given to quantitative disclosures is based on the assertion that precise information is more useful and will enhance management’s reputation and credibility (Botosan, 1997). Past research shows that the same scoring technique has been used in studies from Australia (Guthrie & Petty, 2000; 2006), Italy (Bozzolan et al, 2003), Spain (Meca & Martinez, 2005), Netherlands, Sweden & UK (Vandemaele et al, 2005), Portugal (Oliveira et al, 2006), Australia (Sujan & Abeysekera, 2007; Woodrock and Whiting, 2009), Bangladesh (Ali et al, 2008).

Table 3.1

<table>
<thead>
<tr>
<th>Information Category</th>
<th>Score Assigned</th>
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</thead>
<tbody>
<tr>
<td>Information in quantitative form</td>
<td>2</td>
</tr>
<tr>
<td>Information in qualitative form</td>
<td>1</td>
</tr>
<tr>
<td>No information</td>
<td>0</td>
</tr>
</tbody>
</table>

The above scoring technique has been used for all attributes in all categories except for first four attributes in Mandatory Disclosure Requirement category, whereby a score of ‘1’ has been given if the disclosure requirement is fulfilled and a score of ‘0’ is given if the requirement was not satisfied. This is because these attributes are all qualitative and only their presence or absence has been studied in the annual reports.
3.3 HYPOTHESES OF THE STUDY

Keeping into consideration the third objective of the study, the following null and alternate hypotheses were framed and tested:

\( H_01: \) The size of a company as measured by its total assets or total sales or total market capitalization has no significant impact on its intangible assets disclosure score.

\( H_1: \) The size of a company as measured by its total assets or total sales or total market capitalization has a significant impact on its intangible assets disclosure score.

\( H_02: \) The leverage of a company as measured by its debt-equity ratio has no significant impact on its intangible assets disclosure score.

\( H_2: \) The leverage of a company as measured by its debt-equity ratio has a significant impact on its intangible assets disclosure score.

\( H_03: \) The audit firm size of a company has no significant impact on its intangible assets disclosure score.

\( H_3: \) The audit firm size of a company has a significant impact on its intangible assets disclosure score.

\( H_04: \) The profitability of a company as measured by its ROA or ROS or ROCE or RONW has no significant impact on its intangible assets disclosure score.

\( H_4: \) The profitability of a company as measured by its ROA or ROS or ROCE or RONW has a significant impact on its intangible assets disclosure score.

\( H_05: \) The listing category of a firm has no significant impact on its intangible assets disclosure score.

\( H_5: \) The listing category of a firm has a significant impact on its intangible assets disclosure score.

\( H_06: \) The extent of foreign activity of a company as measured by its total exports to total sales ratio has no significant impact on its intangible assets disclosure score.

\( H_6: \) The extent of foreign activity of a company as measured by its total exports to total sales ratio has a significant impact on its intangible assets disclosure score.

\( H_07: \) The nature of industry to which a company belongs has no significant impact on its intangible assets disclosure score.

\( H_7: \) The nature of industry to which a company belongs has a significant impact on its intangible assets disclosure score.

3.4 DEFINITION OF VARIOUS CORPORATE ATTRIBUTES
3.4.1 Size of a Firm

Size of a firm has been measured in three explanatory variables namely, total sales, total assets and market capitalization.

Total Sales = Total sales;
Total Assets = Fixed Assets net of depreciation + Total Current Assets; and
Market Capitalization = Market Capitalization as on March 31, 2004 & 2008

3.4.2 Profitability of a Firm

Profitability of a firm has been measured in four explanatory variables namely; return on assets (ROA), return on sales (ROS), return on net worth (RONW) and return on capital employed (ROCE).

ROA = PBIAT (net of P&E)\(^1\) / (Total assets-current liabilities);
ROCE = PAT (net of P&E)\(^2\) / Capital employed
RONW = PAT (net of P&E)/ Net Worth; and
ROS = PAT/ Net Sales\(^3\)

3.4.3 Leverage of a company

The total Debt to total Equity ratio has been used as a surrogate to measure the leverage of a company in the present study.

3.4.4 Listing category of a company

The companies trading on stock exchanges in India are categorized as category A, B, S, T, TS and Z. The impact of listing category of a firm has been examined by introducing dummy variable, with 1 if firm falls under A category and 0 otherwise.

3.4.5 Audit Firm Size

500 audit firms of BT-500 companies were divided into large (Big-six: Price Waterhouse; A.F. Ferguson; S.B. Baltiboi; Delloitte; Haskins and Sells and B.S.R. & Co.) and small firms (other than above Big-six). It has been used as a dummy variable. The companies being audited by Big-six audit firms were assigned 1 and others 0.

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\(^1\) PBIAT (net of P&E) = Profit before interest but after tax, net of prior period and extraordinary income and expenses.
\(^2\) PAT (net of P&E) = Profit after tax, net of prior period and extraordinary income and expenses.
\(^3\) Net Sales = Total Sales net of returns
3.4.6 Foreign Activity

The Total Exports to Total Sales ratio has been used to determine the level foreign activity of a firm.

3.4.7 Nature of an Industry

The study uses two approaches to analyse industry effects. Under the first approach the companies have been classified into 13 broad industries which are:

1. Agri input and tobacco
2. Automotive
3. Banking & financial services
4. Capital goods, industrial and engineering products
5. Construction & electricity
6. Consumer goods, electronics, durables & FMCG
7. Drugs & pharmaceuticals
8. Media & telecommunication
9. Petrochemicals, chemicals & plastic products
10. Software, IT & ITES
11. Steel & other metals and minerals
12. Textiles & apparel
13. Transport, tourism, hotels & other diversified

In the second approach all companies have been clustered into two broad industry groups “high intangible assets intensive firms” and “others”. “High intangible assets intensive firms” group covers Software, IT & ITES, Drugs & pharmaceuticals and Media & telecommunication industries. Remaining industries were categorized under the group “others”. It was then used as a dummy variable whereby a score of one was given to companies in “high intangible intensive” group and a score of zero was given to companies in the “Others” group.

3.5 ANALYSIS OF DATA

A number of statistical techniques have been used for the analysis of data. Data for 2003-04 and 2007-08 has been analysed using descriptive statistics and paired sample t-test. The attribute-wise disclosure score and company-wise disclosure score were also calculated. Nature of intangible assets reporting was also studied.
The attribute-wise disclosure score has been calculated for each attribute included in the intangible assets disclosure index, by dividing the total weighted disclosure score attained for that attribute with the maximum weighted disclosure score.

The company-wise disclosure score has been calculated by dividing the total weighted disclosure index score obtained by a company during a particular year by the maximum score applicable to the company.

The Two-factor ANOVA, Product moment correlation coefficient analysis, Univariate and Backward step-wise regression analysis have been used to analyse the impact of corporate specific attributes on the extent of intangible assets disclosure of selected companies in India for the two years of the study. For the purpose of above analysis company-wise disclosure score was used as a dependent variable and various corporate attributes as independent variables.

In order to compare the disclosure practices in India and UK based companies, again the use of descriptive statistics and two-tailed independent samples t-test was made. A comparative study of attribute-wise analysis and category-wise analysis was also made.