Chapter 4 – Materials and Methods

4.1) Primary Sources of Data

A primary data analysis was conducted in the geographic areas of Chennai and Bangalore in South India. The target segment were accounting professionals who were categorized into five distinct categories viz.

4.1.1) Professional Category 1 - “Professionals in Practice” or Accounting Professionals certifying financial records in fulfilment of statutory obligations. Examples are auditors certifying the financial and statements under legal requirements.

4.1.2) Professional Category 2 – “Internal Auditors” or Accounting Professionals employed by organizations to verify their internal financial and operational details.

4.1.3) Professional Category 3 – “Domain Experts” or Accounting Professionals who are experts in their respective domain. Professionals in the Finance and Costing departments of an organization are in this category.

4.1.4) Professional Category 4 – “Research Associates” or Accounting Professionals engaged in the vocation of analysing financial statements for potential certifications and investments.
4.1.5) Professional Category 5 – “Business Analysts” or Accounting Professionals engaged in creating systems, procedures, models and work flows for business entities.

4.1.1) The Universe

Descriptive Statistics for the study used a questionnaire on a seven scale Likert scale to analyse the professional practices in vogue and obtain the opinions of the professionals.

To obtain the population size, the three professional accounting bodies were approached. Based on the data of members, the population in the two metro areas of Bangalore and Chennai, (rounded to the nearest hundredth) were estimated as in Table 4.1 based on the data available with the professional institutes.

<table>
<thead>
<tr>
<th>Serial</th>
<th>Professional Type</th>
<th>Approximate Number of Members (Rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In Practice</td>
</tr>
<tr>
<td>1</td>
<td>Chartered Accountants</td>
<td>1,800</td>
</tr>
<tr>
<td>2</td>
<td>Management Accountants</td>
<td>300</td>
</tr>
<tr>
<td>3</td>
<td>Company Secretaries</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.1 – Estimated Population of Accounting Professionals in Bengaluru and Chennai
4.1.2) **Sample Size Determination**

The sample size selection is based on sampling based on proportion determined by the standard formula

\[
N = \frac{p \times (1-p)}{(SE)^2}
\]

Where

- \( N \) = Sample Size
- \( P \) = probability of Response
- \( SE \) = Confidence Level / Z Value for Level of Accuracy

The average estimated response rate based on the opinion at the professional institutes is 10.00%. Based on a 0.05 level of significance or a 95.00% level of confidence the sample size (N) has been computed to be approximately 140 respondents.

A stratified random sampling was conducted based on the alphabetic sequence. Every 10\(^{th}\) practising member and every 15\(^{th}\) non practising member was approached through their respective professional body and personal contacts for a response.

The selection was restricted to only members registered with the professional bodies in their respective Southern India Regional Council. The summary of the sample survey and responses conducted are as depicted in Table 4.2.
<table>
<thead>
<tr>
<th>Serial</th>
<th>Professional Type</th>
<th>In Practice</th>
<th>Not In Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Solicited</td>
<td>Responded</td>
<td>Solicited</td>
</tr>
<tr>
<td>1</td>
<td>Chartered Accountants</td>
<td>180</td>
<td>35</td>
</tr>
<tr>
<td>2</td>
<td>Management Accountants</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Company Secretaries</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>220</strong></td>
<td><strong>35</strong></td>
<td><strong>1,300</strong></td>
</tr>
<tr>
<td>Response Percentage</td>
<td>15.90%</td>
<td>7.76%</td>
<td></td>
</tr>
<tr>
<td>Overall Response Percentage</td>
<td>8.94%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2 - Distribution of Questionnaires and Responses Received

4.1.3) Tools for Data Collection

Questionnaires and Schedules were used for the survey. The sample Questionnaire / Schedule is in Appendix 1. A few respondents were personally approached for their response while others responded through e-mail responses after they were contacted several times for a response.

Forty five variables representing professional practices and opinions were distributed based on stratified sampling to the professionals. Questions were marked on a seven point Likert scale.
The questions related to variables that described practices and preferences based on the

- Opinions expressed by select professionals and
- Documentation in the publications of the professional bodies regulating the profession.

The questionnaires were distributed to 1,520 individuals. These were administered through stratified random sampling based on the data base of professionals maintained with the professional bodies. This was followed up by personal visits to selected professionals. 136 responses were received with a response rate of 8.94%.

4.1.4) Data Analysis of Primary Data

The hypotheses were tested using the responses to the questionnaire. SPSS Version 20 and Microsoft Excel were used for the statistical analysis. The tools used were

- ANOVA (One Way Analysis of Variance)
- Bartlett Test of Sphericity.
- Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy.
- Factor Analysis.

4.2) Secondary Sources of Data

The study also conducted a sample analysis on the effectiveness of the Beneish Theorem for detecting likely manipulation of financial data. Secondary published data from the Bombay Stock Exchange for the cement industry was considered.
The universe for the study were twenty four quoted cement companies in India for the financial years 2012 to 2014. The cement industry was selected as the industry in India is an oligopoly where seven companies listed on the Bombay Stock Exchange control nearly 80.00% of the sales volume with three companies controlling more than 50% of the sales volume. In terms of market capitalization only four cement companies control 80% of total market capitalization as on 30th January 2015.

The cement industry is controlled by a few companies and is typical of a cartel-type industry amenable to deliberate manipulation of fiscal records.

A detailed analysis was conducted on thirteen cement companies covering nearly 97% of market capitalization and 95% of sales volume as on 30th January 2015.

4.2.1) Tools for Secondary Data Analysis

Analysis was done using the mean of the eight Beneish variables for the thirteen industries as a representative sample.

The standard deviation for each of the eight Beneish variables were extracted and a 90% confidence limit was created to apply the cut off values. The variables were analyzed with reference to the derived cut of values to determine the final conclusion.