CHAPTER 3
RESEARCH METHODOLOGY

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This chapter focuses on the methodology that was followed to reach the empirical objectives for the current study. It further discusses the hypotheses developed based on the literature review, and describes the design of research methodology underlying the examination of the hypotheses.

3.1 Objectives of the Study

In previous chapter on literature review, it enhanced understanding of SMEs distinctiveness, various variables impact on firms’ performance and SMEs’ competitiveness. The objective of this chapter is to describe and discuss the research methodology that has been used for this research. There is extensive literature available in the area of small and medium sized enterprise (SMEs) growth and performance, its uniqueness compare to large enterprise and significance of competiveness of this nature of business enterprise. Most of the theoretical contributions are borrowed from the west and south Asian countries. The Indian studies on firm performance and competitiveness have empirically studied the various aspect of SMEs performance, but no conclusive evidence found especially on financial performance measure as a tool to build competitiveness among SMEs.

This study aims at studying the financial competitiveness of small and medium enterprise working in manufacturing sector using their financial statement for consecutive last 3 years. The methodology is the key to finding answers to the question that initiates the research. The section discusses the objectives, hypotheses proposed for this study, and detail discussions of data collection, sample size and data analysis procedure. To confirm the appropriateness of the research methodology, it is necessary to revisit the empirical objectives. As stated in chapter 1, these were:
Objectives of the Study:

1. To study growth of small and medium sized enterprises (SMEs) & major sectors in which SMEs have existence in Gujarat state.
2. To identify various variables and its impact on the growth of SMEs’.
3. To study uniqueness of SMEs and its impact on financial structure of SMEs acting as a manufacturing enterprise.
4. To assess financial structure impact on SMEs’ financial performance, specifically acting in the manufacturing sectors.

3.2 Hypothesis of the Study

**H₁:** There is no significant relationship between growth factors of SMEs and traditional characteristic and firm specific characteristics of SMEs.

**H₁a:** There is no significant relationship between growth factors of SMEs and Net sales (Traditional characteristic).

**H₁b:** There is no significant relationship between growth factors of SMEs and Total assets of firms (Firm specific characteristic).

**H₂:** There is no significant relationship between category of SMEs (Small enterprise & Medium enterprise) and growth factors of SMEs.

**H₂a:** There is no significant relationship between category of SMEs (Small enterprise & Medium enterprise) and growth factors of SMEs.

**H₂b:** There is no significant relationship between category of SMEs (Based on average annual sales turnover) and growth factors of SMEs.

**H₃:** There is no significant relationship between SMEs capital structure and firm characteristics.

**H₄:** There is no significant relationship between financial leverage and SMEs performance.
3.3 Source of Data

Ghauri et al. (1995) state that “when using a special technique for collecting data, the collecting data can be either primary or secondary data” Bryman and Bell (2007) said that “primary data is information that the researcher gathers on his own, for instance by using interviews, questionnaires and tests. On the other hand, secondary data refers to the data such as literature, documents and articles that is collected by other researchers and institutions”.

The research is carried out by employing secondary data. The SMEs financial statements and other data collected from ACE Knowledge portal, various GIDC offices, Prowess Database, SME Stock Exchange, Ministry of Small and Medium size Enterprises Development (MSMED), Industrial Extension bureau (IndexTb) of Gujarat state, SME Bank Data, SIDBI Data, Chamber of Commerce, SME India, CMIE data, companies’ websites and e-commerce websites like Indiamart. As detail discussion in chapter 1, the size that defines a firm as a SME can be determined using a variety of variables (e.g., employment, sales volume, assets, or qualitative categories such as independent ownership or management), researcher use the investment in plant and machinery as an indicator of SMEs selection as defined in MSMED ACT, 2006, by Indian central government. In that respect, any firm with an investment in plant and machinery of more than Rs.25 lakh and up-to Rs.5 crore considered as “Small Enterprise” and a firm with an investment of more than Rs.5 Crore and up-to Rs.10 crore considered as “Medium Enterprise”.

3.4 Sample and Sampling Plan

As discussed in previous section, this study uses secondary data (Financial Statements of manufacturing SMEs). It needs to test the hypothesis described in the previous chapter by applying the statistical methods on a database comprising major industrial groups with a reasonable sample size.

Of these databases, the ACE Knowledge database was used as the starting point, and the remaining databases were used for filling in some of the data that were
missing from ACE Knowledge database (the XL sheet for final 175 manufacturing SMEs samples is listed in Appendix). The data were provided by the Accord Fintech, a private database management company, which maintenance the database of companies and also offer various services in India. Access to such a comprehensive, longitudinal database provided a unique opportunity.

The search yielded approximately 1375 Gujarat state based manufacturing and service companies enlisted with raw data out of more than 9,500 companies. These 1375 companies’ data were screened on two criteria: (1) Belongs to manufacturing sector (2) Come in to the category of SMEs. All other companies were excluded from the survey. From the 1375 companies identified, only 307 companies met the above mentioned criteria. The financial statements of the SMEs included in the considered sample were collected for the period 2011 to 2013. In the final stage of selection of SMEs, all the raw data were filtered for 307 companies and filtering process yielded approximately 150 SMEs were with insufficient data on various variables that were identified in literature. SME manufacturers here include all types of product manufacturers. All SMEs samples were drawn from manufacturing companies, because, the manufacturing industry is presently under the spotlight and the "Made in India" campaign is one of the contributors to the Indian economy. Although the service industry, for example, software industry is doing well with globalization and export, the manufacturing industry is not left behind and is also the most vulnerable to globalization and export. The considered SMEs originate from a variety of different industrial sectors including food and beverages, textile, chemicals, casting work, engineering and auto ancillary, paper and plastic product manufactures etc.
<table>
<thead>
<tr>
<th>Authors details</th>
<th>Year</th>
<th>Title of Research study</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raffaella Bianchi, Giuliano Noci</td>
<td>1998</td>
<td>Greening SMEs Competitiveness</td>
<td>46</td>
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<tr>
<td>Fotini Voulgaris, Michael Doumpos and Constantin Zopounidis</td>
<td>2000</td>
<td>On the Evaluation of Greek Industrial SMEs’ Performance via Multicriteria Analysis of Financial Ratios</td>
<td>143</td>
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<tr>
<td>Catherine Cassell, Sara Nadin and Melanie Older Gray</td>
<td>2001</td>
<td>The use and effectiveness of benchmarking in SMEs</td>
<td>100</td>
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<tr>
<td>Nicholas O’Regan, Abby Ghobadian and David Gallear</td>
<td>2006</td>
<td>In search of the drivers of high growth in manufacturing SMEs.</td>
<td>207</td>
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<tr>
<td>Kesseven Padachi</td>
<td>2006</td>
<td>Trends in Working Capital Management and its Impact on Firms’ Performance An Analysis of Mauritian Small Manufacturing Firms,</td>
<td>58</td>
</tr>
<tr>
<td>Rajesh K. Singh and Suresh K. Garg</td>
<td>2008</td>
<td>Competency and performance analysis of Indian SMEs and large organizations: An exploratory study</td>
<td>193</td>
</tr>
<tr>
<td>Hongxia Liu and Ali Salman Saleh</td>
<td>2009</td>
<td>The Development of a Financial Index to Examine the Financial Performance of SMEs in China</td>
<td>860</td>
</tr>
<tr>
<td>Rajesh K. Singh, Suresh K. Garg and S G Deshmukh</td>
<td>2010</td>
<td>Strategy development by small scale industries in India</td>
<td>75</td>
</tr>
<tr>
<td>Rajesh K. Singh, Suresh K. Garg and S G Deshmukh</td>
<td>2010</td>
<td>The competitiveness of SMEs in a globalized economy Observations from China and India</td>
<td>241</td>
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</table>
Sampling was done for manufacturing SMEs only and considered 175 SMEs firms are selected on a random basis, taking into account data availability. Such a random sampling can be considered as an advantage of the conducted analysis. Actually, several authors have indicated the drawbacks of non-random sampling procedures, which mainly involve the seriously misleading indications of both a model’s “external validity” and its practical value for decision making purposes (Keasey and Watson, 1991; Palepu, 1986). The financial statements of the SMEs included in the considered sample were collected for the period 2011 to 2013.

### 3.5 Financial Performance Variables

The conceptualization and/or operationalisation of the dependant variables in SME growth and performance studies are diverse and inconsistent among empirical studies. Most studies use a composite index or multiple measures for their dependent variable. They incorporate both financial measures (economic achievements) and nonfinancial operational measures (such as innovativeness or factors that may lead to financial performance) (Rauch, Wiklund, Lumpkin & Frese,
2009; Unger, Rauch, Frese & Rosenbusch, 2011; Venkatraman & Ramanujam, 1986). As expected, from the criteria applied to the selection of sample articles for this literature review, the majority of studies reviewed referred to the dependent variable/s as growth, profitability, and/or performance. The use of multiple measures, between and within studies, complicated analysis and categorization. To illustrate this, some of these studies investigated profitability, expressed in absolute terms in a cross-sectional design, whereas other studies investigated profitability growth in a longitudinal (or time lagged) design and, to complicate matters even more, some studies used both measures in the same study.

Around 68% of SMEs failed in their first five years (Barrow 1997), as a result of many challenges, such as human resource and financial constraints, lack of technical innovation, lack of marketing skills, and the future trend of the development of the SMEs. To reduce such higher failure rate The Chinese government sponsored the development of evaluation system for understanding financial performance of SMEs i.e. The financial evaluation indicator system developed by the Ministry of Finance (1995a) including eight financial indicators, such as current ratio, liquidity ratio, debt to asset ratio, accounts receivable turnover ratio, and inventory turnover ratio. Ren (2003) established a competitiveness evaluation system for Chinese SMEs, which refers to indicators including three aspects—survival capability, growing capability, and development capacity, such as total profit, sales, debt to asset ratio, and so on and use an evaluation method based on the analytical hierarchy process (AHP) model. Liu and Saleh (2009), in their study of development of a financial index to examine the financial performance of SMEs in China, used various financial indicators (Table) to evaluate the financial performance of SMEs.

Many of the studies therefore did not differentiate between growth and performance as they perceived performance to also include growth. This meant that determining the exact proportional prevalence of performance as opposed to growth measures was not possible. To provide an accurate indication of the relative importance
attached by the authors to the different conceptualizations, each dependent variable was grouped under the headings of financial and nonfinancial measures (Rauch et al., 2009).

<table>
<thead>
<tr>
<th>Financial Variables of the Firms</th>
<th>Definition / Calculation</th>
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<tbody>
<tr>
<td>Inventory turnover ratio</td>
<td>Costs/ Average Inventory</td>
</tr>
<tr>
<td>Asset turnover ratio</td>
<td>Total Revenues / Average Total Assets</td>
</tr>
<tr>
<td>Current ratio</td>
<td>Current Assets / Current Liabilities</td>
</tr>
<tr>
<td>Debt to asset ratio</td>
<td>Total Liabilities/ Total Assets</td>
</tr>
<tr>
<td>Rate of return on total assets</td>
<td>Net profit / Average total assets</td>
</tr>
<tr>
<td>Net profit of main business</td>
<td>Net profit / Total Revenues</td>
</tr>
<tr>
<td>Growth rate of Business Revenue</td>
<td>(Revenue at the current period – Revenue at the last period) / Revenue of Business at last period</td>
</tr>
<tr>
<td>Profit to cost ratio</td>
<td>Net profit / Total Expenses</td>
</tr>
<tr>
<td>Cash flow to sales ratio.</td>
<td>Net operating cash flows / Total revenues</td>
</tr>
</tbody>
</table>

Source: Liu and Saleh (2009)

Weiner and Mahoney (1981) have noted that 'the number of firm performance measures that could serve as dependent variables is almost infinite.' Growth and profitability were found to be the two performance dimensions most frequently used in the empirical research. Financial performance in terms of growth ratios, for example, sales and sales growth and profitability are the most recognized performance indicators because they directly measure what is most desired by shareholders and investors in the firm (Weston & Thomas, 1985). Gross profit margin is the most important indicator to measure financial performance in organization; it is show Operational efficiency of any organization. Some literature suggests that financial performance can be measured in terms of profitability measure on Return on Sales (ROS), profitability measure on Return on Assets
(ROA), and profitability measure on investment that is Return on Investment (ROI). Efficiency indicators, such as return on assets (ROA), were used frequently. The former, however, was used more frequently in recent studies, while return on investment (ROI) was more frequently used ten years ago (Wu, D. 2009). Gross Profit margin is key indicator to success of the business. Performance is a quality of any company or firm which can be achieved by valuable results. For example, a firm having high return on assets (ROA) is said to be performing well.

<table>
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<tr>
<th>Table 3.3 Financial Performance (FP) as an organizational performance</th>
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<tbody>
<tr>
<td><strong>Gross Profit Margin</strong> (GPM)</td>
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<tr>
<td><strong>Return on Assets</strong> (ROA)</td>
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<tr>
<td><strong>Return on Capital Employed</strong> (ROCE)</td>
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</table>

*Source: Literature review*

Taking into consideration the corporate finance theory established relative measures of profitability, the return on assets (ROA) and the return on equity (ROE), in addition to some ratios such as net profit to sales ratio, cost to sales ratio, etc., whose actual size and influence are used in diagnosing the profitability of a company (Stancu, 2007: 705). However profitability rates of any organization will not be the absolute standard criteria used for evaluation, as they provide valuable information in combination with other indicators that highlight the changes in operation and financing over several periods and compared with other organization on the respective market (Helfert, 2001: 96). Usually business organizations that
have achieved success in the competitive field, it began thinking in finding mechanisms which can maintain it, and found that, the adoption of appropriate strategies can bring them access to competitive advantages in different time frames, represented by the search for outstanding organizational performance indicators, especially the financial aspect and work on the continuity and sustainability of this performance in the context of long-term, schedule Vintila G. (2005).

3.6 Statistical Analysis

This section provides information concerning the selection of data analysis techniques, including justification for this selection. The cross sectional data used in this study, obtained from the last three years (2011 to 2013) financial statement of the sample unit SMEs. Based upon the past literature studies as discussed in previous section and available financial data, various “Financial Indicators/Ratios was selected including Profitability Ratios, Solvency Ratios (including liquidity) and Managerial performance Ratios following the financial ratio categorization framework proposed by Courtis (1978). Variables used in this research are metric nature, have irregular distributional properties (that is, they are non-normally distributed). Thus, non-parametric/ distribution-free techniques of statistical analysis employed. The study used t test, Regression Model, Analysis of Variance (ANOVA) to examine the relational variable to check financial performance and competitiveness of SMEs.

3.7 Limitation and Scope for Future Research

Although this study has made a significant contribution to theory and methodology of the SMEs growth measurement and firm financial performance and competence relation to capital structure, its findings and implications inevitably have limitations. The unit of analysis was restricted to manufacturing industries within the Small to Medium Enterprises sites in the Gujarat state.

This study uses a quantitative approach and all identified factors affecting SME growth and competence are used from the firm financial statements. As SMEs not
followed stringent accounting process, the data inaccuracy and sufficiency is the major limitation of the study. The most notable one is related to the lack of complete data for some proxy variables i.e. short term and long-term debt, intangible assets, firms’ age, ownership structure. Such proxy variable can further improve the understanding of firm competence. In addition, the empirical results are derived from a sample of 175 manufacturing SMEs working in major cities of Gujarat state. The limited sample size also may impact the study results.

This research sought to investigate financial competitiveness of SMEs through incorporating firms’ growth determinants and capital structure impact on firm competence working as manufacturing SMEs. Though, researcher have tried to incorporate recent aspects affecting SMEs financial competitiveness but still there is always future scope as discussed below.

This study has focused on small and medium enterprises working in manufacturing sector. Future research may explore small and medium enterprises working in the service sector. Further research may examine other factors which also influence growth of SMEs’ and financial competitiveness, apart from identified factors in this study. This research identified SMEs’ growth determinants and capital structure component that impact on financial performance and competitiveness of firm. The causality and extent of impact can be explored in further research. Further future research may examine impact of capital structure on firm performance by considering a broader time period analysis in order to elucidate the change in the performance at various stages of life cycle of SMEs. This study considered SMEs growth determinants and capital structure factor to measure firm performance. The future study may investigate the relationship between working capital management and the firm’s profitability with a broader set of companies operating in India.

This study used three year cross-sectional data of firm and multiple regression analysis method. This regression technique is not fully able to recognize the complex statistical pattern between default characteristics and the independent risk
variables. Future study can be done on large data set period using panel regression method. Also researcher can use logit models as analysis techniques as this model rely on parametric assumptions regarding the shape of distribution of data.

3.8 Chapter Summary

This chapter has presented an overview of the methodology employed in this study to address the research problem. The methodology was based on identification of various financial variables using the literature study as well as input from experts in the field. The quantitative approach of this research was justified. Various hypotheses were developed on the basis of the literature review, research methods including procedures and data analysis methods were discussed. To test the hypotheses, Independent samples’ T Test, Regression analysis and ANOVA was employed. The reasons for using cross-sectional data as well as stated analysis techniques were also justified.
References


