Chapter – III

RESEARCH DESIGN

3.1 Introduction

This chapter examines the framed objectives and formulated hypotheses. The methodology of the study has been explained in this chapter with respect to content and coverage of the study. The methodology part deals with sampling framework, mode of data collection, tools of data collection and data analysis procedure. This chapter gives due attention to types of statistical tools usage in data analysis and operational definition of key concepts applied in the study. This chapter concludes limitations and delimitation of the study.

3.2 Statement of Problem

In a competitive environment, measuring performance has become critical to the success of business. Performance measurement aligns organizational resources, activities and processes to the major objectives of the organization. It helps the companies to decide their objectives very clearly and promote a change in perspective from activities to results. Performance measurement is an ongoing process, rather than a single event and it focuses on various aspects. This study attempts to take a look into business performance based on profit and credit level, organisational process and strategies adopted, organisational capability and resource utilisation capacity, performance of organisational environment and organisational effectiveness of small and medium enterprises.
3.3 Need for the Study

Medina-Borja and Triantis (2007) highlighted the usefulness of performance measurement in terms of restructuring and rationalization. Performance measurement can be an effective tool in order to restructure without spoiling the quality of the services. It provides an overview of organizational deficiencies and discovers the relevant areas where improvements and rationalizations are required and urgent. Earlier research has highlighted the importance of performance measurement of organisations, products or processes. But lack of clarity over many concepts is still in literatures. However, few researches have focussed on examining performance measurement and there is a need to focus on the organisational process, capability, environment and effectiveness. As of now, there is no study on SIPCOT industrial region performance measurement in Tamil Nadu. This study provides lot of information in this area. It draws the attention of management to consider some qualitative variables in measuring firm performance. Also it serves as a source material to policy makers and researchers in this area.

3.4 Objectives of the Study

1. To understand the business performance of small and medium enterprises with reference to profit and credit level in SIPCOT industrial region in Tamil Nadu.
2. To examine the organizational process and strategies adopted in small and medium enterprises on the basis of ratings of the entrepreneurs.
3. To analyze the organizational capability and resource utilization capacity among the selected small and medium enterprises in SIPCOT industrial region in Tamil Nadu.
4. To assess the performance of organizational environment among the selected small and medium enterprises in SIPCOT industrial region on the basis of ratings of the entrepreneurs.

5. To measure the organizational effectiveness of small and medium enterprises in SIPCOT industrial region on the basis of rating of the entrepreneurs.

3.5 Hypotheses

1. There is a significant association between organizational duration, size and industrial category with respect to investment, profit and credit level among the selected small and medium enterprises in SIPCOT industrial region in Tamil Nadu.

2. The business and organizational performance of small and medium enterprises depends on duration of enterprise, category of enterprise and size of enterprise.

3. There is a significant regional variation with respect to organizational capability and resource utilization capacity among the selected small and medium enterprises in SIPCOT industrial region in Tamil Nadu.

4. The performance of organizational environment differs according to the size of the enterprise, duration of enterprise and industrial category in SIPCOT industrial region.

5. There is a significant variation in organizational effectiveness among the small and medium enterprises in SIPCOT industrial region on the basis of rating of the workers.

3.6 Research Approach

3.6.1 Methodology

This study aims at analyzing the performance of small and medium enterprises in SIPCOT industrial region in Tamil Nadu. This study is undertaken in two dimensions. The first dimension relates to the organizational economic background analysis in terms
of level of investment, level of bank credit availed, extent of repayment of bank credit and level of profit generation. The second dimension relates to the organizational performance measurement on the basis of ratings of the entrepreneurs. The organizational performance can be measured in terms of organizational process and strategies adopted among the small and medium enterprises. The performance analysis could be carried out in terms of organizational capability and resource utility level from the point of view of entrepreneurs. The study of organizational environment is one of the factors in determining organizational performance. It could be analyzed in the study. The organizational performance could be observed in terms of organizational effectiveness. In this study, variables relating to organizational performance could be identified under exploratory research framework. The identified organizational performance indicators are cross tabulated with SIPCOT industrial region, category of industry, duration of industry and size of industry under analytical framework. Thus, this study is partly exploratory in nature and partly analytical in nature.

3.6.2 Data Collection

The data relating to economic profile of the industries are collected from the entrepreneurs through questionnaire method. The researcher has circulated the questionnaire to the entrepreneurs and it does not cover workers population. They went through the questionnaire and filled the answer. Then they return it to the researcher. The respondents are encouraged to give their free and frank responses. The respondents have extended their full cooperation in successful data collection. The data collection was carried out from June 2012 to December 2012.
3.6.3 Questionnaire Design

An exclusive questionnaire was designed to collect primary data with regard to business performance, organisational process and strategies, organisational capability and resource utility, organisational environment and organisational effectiveness of small and medium sized enterprises functioning in SIPCOT industrial region, Tamil Nadu. A personal data sheet was also used to collect information on demographical aspects of the respondents. The demographic details of the respondents contain nine questions on gender, age, marital status, community, education qualification, occupation, family type and income. Gender contains two categories, that are male and female. Marital status has been classified as married, unmarried, and divorced. Family type is classified as joint or nuclear families. Others are in open ended questions.

3.6.3.1 Business Performance

Business performance has been measured with the help of the identified variables in the study. These include growth in sales, growth in market share, growth in profit, return on assets, return on equity, net cash flow, gross revenues, total asset turnover, average return on sales, cash flow to sales, inventory turnover, debt to equity, times interest earned, employees were helped to help their community, customer satisfaction, customer satisfaction relative to competitors, employee satisfaction, employee turnover, employee royalty, remuneration and benefits and market share.

3.6.3.2 Organizational Process and Strategies

In this study organizational process and strategies can be measured on the basis of identified variables. These include customer based strategy, market based strategy, consideration of employees ideas in planning company future, periodical review of
strategy based on information from customers and environment, deployment of strategy through a framework of key process, provision of new products to exist market, provision of established products to new market, provision of new products to new markets, organizational process ensures changes in customer and market requirements, delivery process meet the expectations of the customers, proper evaluation of organizational process, support process towards finance and accounting, support process towards information technology, support process towards personal, legal and risk management, support process towards achievement of organizational goal, proper evaluation of organizational process, support process towards workers commitment to work, coordination of product design, production and delivery and incorporation of technology in product and service design.

3.6.3.3 Organizational Capability and Resource Utility

In this study organizational capability and resource utility can be measured on the basis of identified variables. These include response to customers’ needs, effective management of people, understanding technology trend, flexibility to adopt new technology, effective management of organization resources, adequate availability of capital, access to low cost factors of production, expertise in products service development, expertise in marketing, expertise in customers’ service, access to low cost distribution channels, efficient organizational system, efficient planning, efficient manpower planning, enterprise culture and maintenance of company reputation.

3.6.3.4 Organizational Environment

In this study organizational environment can be measured on the basis of identified variables. These include clear knowledge of organizational customer groups,
clear knowledge of organizational market segments, anticipating customer needs, developing opportunities, getting feedback about product quality, collecting and analyzing customers’ complaints, measurement of customer satisfaction, understanding the changes in technology, awareness of company’s competitors along with company’s competitive position in the market, collecting information about competitors, degree of industry concentration, entry barriers, size and growth rate of the industry, stage of industry evolution, environment regulation in the industry, carbon tax payment, following allowable limit of emitting pollutants, reducing level of releasing pollutants as per the government regulations and application of green productivity concept.

3.6.3.5 Organizational Effectiveness

In this study organizational effectiveness can be measured on the basis of identified variables. These include data collection about financial information and non-financial information, data collection to meet the goals and achievement of the organization, collection and analysis of competitor information, knowledge of employees towards the goals of the organization, utilization of appropriate performance measurement tools and skills, measurement of organizational goals and objectives, contribution of employees towards the achievement of the goals of the organization, investment in new product development, efficiency of new product development, emphasizing employees training, renewal of organizational structure and system based on the environmental changes, flexibility to adopt new technology and market trends, adoption of ICTs in organization management, proper dissemination of organizational information to the employees, proper evaluation of work performance of the employees, provision of incentives for the effective work performance, recognition of effective work
done by the employees, provision of basic facilities in the working environment and getting good suggestions from the employees.

3.6.4 Reliability and Validity of measuring Tools

Pilot study

Primary data were collected from the respondents through questionnaire. Before using them for the final investigation, they were tested for reliability and validity. A pre-try out study was conducted to ascertain the reliability of the questionnaire for the population. A random sample of 50 respondents was taken for this purpose. The obtained information was scored and statistically treated. A correlation was worked between odd and even items for each scale separately product moment correlation method. This was subjected to Spearmen–Brown formula for the purpose of finding correlation coefficient for the entire scale. This gave reliability co-efficient for the scale. Further the validity coefficient was also worked out from the reliability coefficient. Both reliability and validity coefficient were subjected to ‘t’-test separately. Its level of significance was fixed by employing the formula as suggested by Edwards (1969):

\[ r = r \sqrt{n-2/(1-r^2)} \]
Table-3.1: Reliability Co-efficient and Test of Significance for the Questionnaire used in the Study

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Test</th>
<th>N</th>
<th>Reliability correlation co-efficient</th>
<th>Test of Significance</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Factors of perceptions on business performance</td>
<td>50</td>
<td>0.7540</td>
<td>17.68</td>
<td>0.01</td>
</tr>
<tr>
<td>2</td>
<td>Factors of perceptions on Organizational process and strategies</td>
<td>50</td>
<td>0.6990</td>
<td>9.44</td>
<td>0.01</td>
</tr>
<tr>
<td>3</td>
<td>Perceptions on Organizational capability and resource utility</td>
<td>50</td>
<td>0.8120</td>
<td>19.47</td>
<td>0.01</td>
</tr>
<tr>
<td>4</td>
<td>Perceptions on Organizational Environment</td>
<td>50</td>
<td>0.9240</td>
<td>21.83</td>
<td>0.01</td>
</tr>
<tr>
<td>5</td>
<td>Perceptions on Organizational effectiveness</td>
<td>50</td>
<td>0.7830</td>
<td>14.23</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Table-3.2: Validity Co-efficient and Test of Significance for the Questionnaire used in the Study

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Test</th>
<th>N</th>
<th>Validity correlation coefficient</th>
<th>Test of significance</th>
<th>Level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Factors of perceptions on business performance</td>
<td>50</td>
<td>0.7443</td>
<td>18.13</td>
<td>0.01</td>
</tr>
<tr>
<td>2</td>
<td>Factors of perceptions on Organizational process and strategies</td>
<td>50</td>
<td>0.8468</td>
<td>15.94</td>
<td>0.01</td>
</tr>
<tr>
<td>3</td>
<td>Perceptions on Organizational capability and resource utility</td>
<td>50</td>
<td>0.7115</td>
<td>9.18</td>
<td>0.01</td>
</tr>
<tr>
<td>4</td>
<td>Perceptions on Organizational Environment</td>
<td>50</td>
<td>0.9231</td>
<td>23.5</td>
<td>0.01</td>
</tr>
<tr>
<td>5</td>
<td>Perceptions on Organizational effectiveness</td>
<td>50</td>
<td>0.7216</td>
<td>12.5</td>
<td>0.01</td>
</tr>
</tbody>
</table>

The five point scale consists of various levels of perceptions, such as strongly agree, agree, undecided, disagree, and strongly disagree. These levels of perceptions are given rating scores. Strongly agree denotes 5 score value, agree 4 score value, moderately agree 3 score value disagree 2 score value and strongly disagree 1 score value. By summing all the score values for a given set of information the total score values are computed. Then average score value for each and every attribute is worked out to show the generalized picture of subject discussion.
3.6.5 Sampling Procedure

In the present study the population has actually two strata namely small entrepreneurs with more than ten years of business and medium entrepreneurs with more than ten years of business. Hence the purpose sampling is to be adopted. In this study six different regions for data collection namely Ranipet, Hosur, Cuddalore, Tuticorin, Cheyyar and Siruseri have been identified. Stratified sampling technique will be used to select the category of respondents to be included in the sample. Stratified sampling technique is a technique that identifies subgroups in the population and their proportion and selects from each subgroups to form a sample.

<table>
<thead>
<tr>
<th>Area</th>
<th>Total number of small enterprises with more than ten years of business</th>
<th>Number of sample</th>
<th>Total number of medium enterprises with more than ten years of business</th>
<th>Number of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranipet</td>
<td>172</td>
<td>55</td>
<td>134</td>
<td>51</td>
</tr>
<tr>
<td>Hosur</td>
<td>186</td>
<td>60</td>
<td>165</td>
<td>64</td>
</tr>
<tr>
<td>Cuddalore</td>
<td>126</td>
<td>41</td>
<td>85</td>
<td>33</td>
</tr>
<tr>
<td>Tuticorin</td>
<td>108</td>
<td>35</td>
<td>95</td>
<td>36</td>
</tr>
<tr>
<td>Cheyyar</td>
<td>119</td>
<td>38</td>
<td>87</td>
<td>33</td>
</tr>
<tr>
<td>Siruseri</td>
<td>132</td>
<td>42</td>
<td>78</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>843</td>
<td>271</td>
<td>644</td>
<td>247</td>
</tr>
</tbody>
</table>

In all the six regions put together nearly 843 small entrepreneurs with more than ten years of business and 644 medium entrepreneurs with more than ten years of business are functioning. Keeping the total respondents as 1,487 sample size of 271 from small business and 247 from medium business were chosen using Slovin’s formula. (Rininta

\[ n = \frac{N}{1 + N e^2} \]

Where \( n \) = number of samples
\( N \) = total population
\( e \) = margin of error

The researcher has collected SIPCOT industrial region for the purpose of the present study. Tamil Nadu has 17 SIPCOT industrial regions. Out of them, the researcher has selected 6 SIPCOT industrial regions for the purpose of the present study. The SIPCOT industrial region which has long duration of functioning alone was selected. These include Ranipet, Hosur, Cuddalore, Tuticorin, Cheyyar and Siruseri. In this study small enterprises and medium enterprises are selected. According to Reserve Bank of India small enterprise means investment in the range of Rs.25 – 500 lakhs and employing workers up to 100. The medium enterprise means investment in the range of Rs.500 – 1,000 lakhs and employing up to 250 workers. Ranipet SIPCOT region has 172 small entrepreneurs functioning with more than ten years out of them 55 small entrepreneurs are selected, constituting 31 per cent of the universe and 134 medium entrepreneurs with more than ten years of functioning and out of them 51 medium entrepreneurs are selected, constituting 38 per cent of the universe. Hosur SIPCOT region has 186 small
entrepreneurs with more than ten years of functioning and out of them 60 small entrepreneurs are selected, and 165 medium entrepreneurs with more than ten years of functioning and out of them 64 medium entrepreneurs are selected. Cuddalore SIPCOT region has 126 small entrepreneurs with more than ten years of functioning and out of them 41 small entrepreneurs are selected, and 85 medium entrepreneurs with more than ten years of functioning and out of them 33 medium entrepreneurs are selected. Tuticorin SIPCOT region has 108 small entrepreneurs with more than ten years of functioning and out of them 35 small entrepreneurs are selected, and 95 medium entrepreneurs with more than ten years of functioning and out of them 36 medium entrepreneurs are selected. Cheyyar SIPCOT region has 119 small entrepreneurs with more than ten years of functioning and out of them 38 small entrepreneurs are selected, and 87 medium entrepreneurs with more than ten years of functioning and out of them 33 medium entrepreneurs are selected. Siruseri SIPCOT region has 132 small entrepreneurs with more than ten years of functioning and out of them 42 small entrepreneurs are selected, and 78 medium entrepreneurs with more than ten years of functioning and out of them 30 medium entrepreneurs are selected. In total 271 small entrepreneurs are selected from the universe of 843 constituting 32.15 per cent and in total 247 medium entrepreneurs are selected from the universe of 644 constituting 38.35 per cent. Thus, in total 518 entrepreneurs are selected as sample out of the total 1,487 entrepreneurs under proportionate random sampling method.

3.7 Data Analysis

The collected data have been classified and tabulated with the help of computer programming. Cross tabulation is done putting independent variables such as SIPCOT
industrial region, duration of the industries, and size of industry and dependent variables performance variables. In order to study the association between industrial status and level of investment, level of credit and profit margin, the chi-square test is applied. In order to study the variation within sample and between samples, the Anova two-way model is applied. The ‘t’ test is applied to study the difference between medium enterprises and small enterprises in their performance. The general data interpretation is done with the help of percentage and average analyses.

In order to study the factors determining the profit level of the enterprises, the multiple regression model is applied. The dependent variable profit level was computed on the basis of 7 independent variables on a 5 point rating scale. It is written as

The linear regression model formed is

\[ Y = a + b_1 X_1 + b_2 X_2 - \cdots - b_n X_n + e \]

\( Y \) = Profit level
\( a \) = Constant
\( b_1 \) - \( b_n \) indicates the regression co-efficient of the given independent variables.
\( e \) = Residual error
\( X_1 \) = Investment
\( X_2 \) = Credit level
\( X_3 \) = Education
\( X_4 \) = Industrial category
\( X_5 \) = Family Size
\( X_6 \) = Cost of production
\( X_7 \) = Productivity
3.8 Framework of Analysis

The researcher has applied 5 point rating scale to analyze the entrepreneurs’ perception on organizational performance. The rating strongly agree denotes the 5 point rating score, agree the 4 point rating score, somewhat agree reveals the three point rating score, disagree denotes the two point rating score and strongly disagree indicates the one point rating score.

3.9 Limitations

The findings of the study are applicable to SIPCOT industrial region and it does not apply to other industrial estates. The result of the study deals with small and medium enterprises and large enterprises are not brought under the purview of the present study. In this study, performance measurement has been carried out on the basis of entrepreneurs’ point of view and management point of view has not been covered. This study mainly focuses on organizational performance from the point of view of perceptions.

3.10 Summary

This chapter has dealt with the various aspects of objectives, hypotheses and methodology of this research study. Based on the importance of this study, a well conceived research approach was presented. A detailed research activity has been logically presented in this chapter. The results obtained are presented and discussion has been made in the next chapter.