CHAPTER - III
RESEARCH METHODOLOGY

3.1 INTRODUCTION

The research methodology takes an important role in deciding the path of the research. It is a way through which the research process should go on. It is essential to describe the methodology of a research. So, this chapter is an effort of narrating the research mythology. This chapter presents a detailed discussion of research design, the research hypotheses to be tested, and the methodology used to test the critical factors affecting performance and its hypotheses present a simple conceptual model for testing the critical dimensions.

The present study is descriptive one and it is based on the Demographic profile of the SHG members, Problems of SHG members, Expectation of SHG members, assessment of SHG members’ performance, satisfaction of the SHG members and Women empowerment through SHG. Selected districts of Tamil Nadu namely Tiruchirappalli district, Thanjavur district and Pudukkottai district are considered as the geographical areas for the research. Before undertaking the study in full-fledged scale, a pilot study was held in various places in order to know the scope and problems involved in the present study.

3.2 PILOT STUDY

This is preliminary investigation conducted by researchers to find out the scope and possibility for conducting a research on a particular topic. The researcher has conducted a pilot study in various places of Tiruchirappalli district, Thanjavur district and Pudukkottai district at limited level and observed facts and conditions towards the business performance and women empowerment through SHG. Apart from that, the researcher observed the satisfaction level of the SHG members. On the basis of experience gained, the researcher has identified the operational aspects of the present research. A pilot study was conducted at the initial stage on February 2016 in order to know the possibility and scope for this study. During the pilot study, it was felt that
the women entrepreneurs are not familiar with the functional areas of business wholly. Their involvement and participation were intensive but they had to meet loss or earn a little profit. On the basis of perception of this in the pilot study, the present research was undertaken at full-fledged scale.

3.3 SOURCES OF DATA USED
Both types of data (i.e.) secondary and primary data are used in the present study. The secondary data have been collected at first form the text books, web sites, journals and other secondary sources. The primary data are collected then from the sample SHG members of the study area.

3.4 TOOL TO COLLECT THE PRIMARY DATA
A well-defined questionnaire is constructed for collecting the primary data from the SHG members. It has two main sections i.e., socio-economic profile, problems faced by the SHG members, expectation of the SHG members, assessment of the SHG members’ performance, satisfaction of the SHG members and women empowerment through SHG. The first section asks the personal details of the women and details of the units relating to the background information and historical data of the business units of the SHG members.

3.5 DIMENSIONS OF THE STUDY
The present study takes the following dimensions for its analysis. Apart from the demographic variables (age, income, education, locality etc. of the SHG members) the following research variables are taken into consideration:

1. Problems faced by the SHG members
2. Expectation of the SHG members
3. Assessment of the SHG members’ performance
4. Satisfaction of the SHG members and
5. Women empowerment through SHG

The dimensions were further split into various sub dimensions.
3.6 QUESTIONNAIRE
A structured questionnaire is constructed to get the primary data from the respondents who are the women SHG members. It includes demographic profile of the SHG members and questions of different forms relating to all other dimensions of the study. It was pre tested among 50 SHG members and appropriate modifications were made in the questionnaire.

3.7 POPULATION AND SAMPLES
The members of SHGs in the selected area for the study are treated as the population of the study. Thanjavur, Tiruchirappalli and Pudukkottai districts are the selected districts of Tamil Nadu are the geographical areas of the present study.

As the population is large one, the method of selecting the sample SHG members is a difficult process. However previous researches have been undertaken with this problem. Conducting a survey among the SHG members creates a unique problem viz., identifying the respondents. It is a common practice in all the cases where there is large sized population, the samples are selected from different strata irrespective of the size of the population.

In Thanjavur district, 17,306 SHGs (as on 1st April.2016) are running. There are 3,46,120 members in all these groups. In Tiruchirappalli district, 15,380 SHGs (as on 1st April.2016) are running. 3,07,600 members participate in the SHGs. In Pudukkottai district, 13,380 SHGs (as on 1st April.2016) are running. 2,11,600 members participate in the SHGs.

Sample size is the number of completed responses your survey receives. It’s called a sample because it only represents part of the group of people (or population) whose opinions or behavior you care about. For example, one way of sampling is to use a “random sample,” where respondents are chosen entirely by chance from the population at large. The two key terms you’ll need to understand to calculate your sample size and give it context:
**Population size:** The total number of people in the group you are trying to study. If you were taking a random sample of people across the U.S., then your population size would be about 317 million. Similarly, if you are surveying your company, the size of the population is the total number of employees.

**Margin of error:** A percentage that tells you how much you can expect your survey results to reflect the views of the overall population. The smaller the margin of error, the closer you are to having the exact answer at a given confidence level.

\[
\text{Sample Size} = \frac{z^2 \times p(1-p)}{e^2} \div 1 + \left( \frac{z^2 \times p(1-p)}{e^2 N} \right)
\]

Where
- \( N \) = Population size
- \( e \) = Margin of error
- \( z \) = Z - Score

From these large size populations, 768 members have been taken totally with the help of sample size calculator (Surveymonkey.com).

For the research purpose, active members who use the SHGs effectively are identified with the help of SHG office bearers. On this condition, the SHGs provided a list of active members. The list consisted of active members and the list was purely a selection of by the various SHGs in the three districts. From the list, snow ball sampling technique has been adopted. This sampling technique is often used in large sized populations. (Wikipedia). From every member, another member was identified. In this way, questionnaires were distributed to 500 members and they were collected.

**3.8 MEASUREMENT SCALE**

In the social science studies, it is imperative to construct proper scale to measure the attributes. (*P.V.Young, 2001*). In the present study, the Problems of SHG members, expectation of the SHG members and women empowerment are measured with the
help of 7 point scale such as strongly disagree, disagree, slightly disagree, neither agree nor disagree, slightly agree, agree and strongly agree. Likewise, the demographic profile of the SHG members is studied with the help of nominal scaling or the categorical type. And assessment of SHG members’ performance is measured with the help of 5 point scale such as worst, bad, Neither good nor bad, good and very good. Lastly the SHG members’ satisfaction is measured by means of 7 point scale such as Highly dissatisfied, Dissatisfied, Slightly Dissatisfied, neutral, Slightly satisfied, Satisfied and Highly satisfied.

3.9 FRAMEWORK OF ANALYSIS
In the analysis section, the questions of the questionnaire have been taken for analysis in the chronological order. Responses of every question are tabulated and then analyzed. The analysis chapter has two major sections such as percentage analysis and statistical analysis. In the percentage analysis, responses for every question are analyzed with the help of percentages. The percentages are the common tools used for analyzing the data and the percentage is the appropriate tool to determine the majority and minority classification in respect of the responses. By means of the percentage analysis, inferences can be made at a logical base (Davis, 1985). So, the percentage analysis was undertaken at first. The statistical analysis section consists of 78 testing of hypothesis. ANOVA Test, Friedman test, Multiple Regression, Neural Network Model, and Analysis of Variance (ANOVA), Wilcoxon signed-rank test and Structural Equation Model were used as analytical tools.

3.10 PROFILE OF THE STUDY AREA
The present study is undertaken in Three leadings districts of Tamil Nadu viz., Thanjavur district, Tiruchirappalli district and Pudukkottai District. A brief profile of the two districts is given in the following section.

3.10.1 Thanjavur District
The study area is located in Thanjavur district, which is one of the 30 districts in the state. The Thanjavur district has a rich historical heritage and is a prism of ancient as
well as the modern south Indian civilizations. The city was once the stronghold of the historic *Cholas* and at one time was also the capital of the *Cholas, Mutharayars* and *Marathas* when they were at the peak of their power. Since then, Thanjavur has been one of the chief political, cultural and religious centers of South India.

Thanjavur is located between latitudes N 09.50' and 11.25' and longitudes E 78 45' and 78 25'. The total geographical area of Thanjavur district is 3396.57 sq. km. i.e., 2.61 per cent of Tamil Nadu's area. Thanjavur is the eleventh largest city in Tamil Nadu with a population of 2,216,138; male population is 49.48 per cent and female population is 50.52 per cent. It has literacy rate of 75.45 percent, 10.51 per cent above the average for the state; male literacy is 55.2 per cent, and female literacy is 44.8 per cent. The district is one of the thirteen coastal districts of Tamil Nadu bounded on the northeast by Nagapattinam District, on the east by Thiruvarur District, on the south by the Palk Strait, of Bay of Bengal, on the west by Pudukkottai District, and on the north by the river Kolidam, across which lie Tiruchirappalli and Perambalur districts. The Thanjavur district comprises of three revenue divisions, namely, Thanjavur, Kumbakonam and Pattukkottai. The district is divided into seven taluks namely, Kumbakonam, Orathanadu, Papanasam, Pattukkottai, Peravurani, Thanjavur, Thiruvaiyaru and Thiruvudaimarudur having 906 revenue villages.

3.10.2 Tiruchirappalli District

Tiruchirappalli district forms the central part of Tamil Nadu. The District is divided into three Revenue Division namely Musiri, Lalgudi and Tiruchirappalli and nine Taluks, namely Thuraiyur, Thottiyam, Musiri, Manachanallur, Lalgudi, Tiruchirappalli, Srirangam, Manapparai and Thiruverambur and is further divided in fourteen blocks covering 408 villages. According to 2011 census, Tiruchirappalli district had a population of 2,722,290 with a sex-ratio of 1,013 females for every 1,000 males, much above the national average of 929.[2] A total of 272,456 were under the age of six, constituting 139,946 males and 132,510 females. Scheduled Castes and Scheduled Tribes accounted for 17.14% and 0.67% of the population.
respectively. The average literacy of the district was 74.9%, compared to the national average of 72.99%.[2] The district had a total of 698,404 households. There were a total of 1,213,979 workers, comprising 161,657 cultivators, 319,720 main agricultural labourers, 25,174 in household industries, 575,778 other workers, 131,650 marginal workers, 9,012 marginal cultivators, 59,062 marginal agricultural labourers, 5,212 marginal workers in household industries and 58,364 other marginal workers. 13230 Self-Help Groups are functioning in the district.

3.10.3 Pudukkottai District
Pudukkottai District is a district of Tamil Nadu state in southern India. The city of Pudukkottai is the district headquarters. It is also known colloquially as Pudhugai. Pudukkottai district is one of the least urbanised district in Tamil Nadu. Pudukkottai district is bounded on the northeast and east by Thanjavur District, on the southeast by the Palk Strait, on the southwest by Ramanathapuram and Sivaganga districts, and on the west and northwest by Tiruchirappalli District. As of 2011, the district had a population of 1,618,345 with a sex-ratio of 1,015 females for every 1,000 males.

The district has an area of 4,663 km² with a coastline of 42 km. The district lies between 78° 25' and 79° 15’ east longitude and between 9° 50' and 10° 40' of the north latitude. On 14 January 1975, Pudukkottai was organized as a separate district comprising the former Pudukkottai Division of Tiruchirappalli district with some additions from Thanjavur District. At present, this district is composed of three Revenue Divisions, namely, Pudukkottai, Aranthangi and Illupur and eleven Taluks, namely, Kulathur, Illuppur, Alangudi Pudukkottai, Gandarvakottai, Thirumayam, Aranthangi, Ponnamaravathi, Karambakudi, Avudaiyarkoil and Manamelkudi. There are 762 Revenue Villages.

The population of the district is 1,618,725 (as per Census 2011). It is 17.02% urbanised.[1] The district depends a great deal on the monsoon for its water supply. The district population is 77.96% literate. According to 2011 census, Pudukkottai district had a population of 1,618,345 with a sex-ratio of 1,015 females for every
1,000 males, much above the national average of 929.[2] A total of 179,688 were under the age of six, constituting 91,696 males and 87,992 females. Scheduled Castes and Scheduled Tribes accounted for 17.6% and .08% of the population respectively. The average literacy of the district was 68.62%, compared to the national average of 72.99%.[2] The district had a total of 387,679 households. There were a total of 761,693 workers, comprising 192,462 cultivators, 234,344 main agricultural labourers, 10,170 in household industries, 203,272 other workers, 121,445 marginal workers, 16,808 marginal cultivators, 70,805 marginal agricultural labourers, 3,771 marginal workers in household industries and 30,061 other marginal workers.[3]

3.11 HYPOTHESES OF THE STUDY

Based on the objectives and the dimensions of the study the following major hypotheses are framed:

- There is no significant relationship between the mean score of socio-demographic profile of the members and financial problems of the SHG members.
- There is no significant difference between mean ranks towards the problems related to finance of the SHG members.
- There is no significant relationship between the mean score of socio-demographic profile of the members and problems related to production by SHG members.
- There is no significant difference between mean ranks towards the problems related to production by SHG members.
- There is no significant relationship between the mean score of socio-demographic profile of the members and problems related to marketing by SHG members.
- There is no significant difference between mean ranks towards the problems related to Marketing by SHG members.
• There is no significant relationship between the mean score of socio-demographic profile of the members and problems related to other aspects by SHG members.
• There is no significant difference between mean ranks towards the problems related to other aspects by SHG members.
• There is no significant relationship between the mean score of socio-demographic profile of the members and expectation of SHG members.
• There is no significant difference between mean ranks towards the expectation of SHG members.
• There is no significant relationship between the mean score of socio-demographic profile of the members and assessment of SHG performance.
• There is no significant difference between mean ranks towards the assessment of SHG performance.
• There is no significant relationship between the mean score of socio-demographic profile of the members and satisfaction of SHG members.
• There is no significant difference between mean ranks towards the satisfaction of SHG members.
• There is positive relationship between the ‘different satisfaction variables’ and ‘The overall satisfaction of the SHG members.’
• There is no significant relationship between the mean score of socio-demographic profile of the members and women empowerment through SHG.
• There is no significant difference between mean ranks towards the women empowerment through SHG.

The major hypotheses were split into sub hypotheses in the analysis section.

3.12 ANALYSIS OF DATA
The data have been analysed through SPSS (20.0) version. The researcher classified the data on various basis and the processed data are presented in tables. In this
analysis, the questions of the questionnaire were taken in the chronological order. Responses of every question were tabulated and then analysed for percentage analysis. In the percentage analysis, responses for every question were analysed with the help of percentages. The first section is the simple percentage analysis that is done with the responses of the SHG members of the three districts in order of the questions contained in the questionnaire. The percentage is a common tool to use make inferences from analysis of data. It reveals the characteristics of the data so that it is used and it is useful to decide whether a particular aspect is desired or opposed by majority respondents or not. The inferences are made from the percentage analysis from majority percentages or minority percentage of a segment of particular variable. The next section is concerned with the testing of the hypotheses with the help of chi square test. This section includes advanced statistical tools.

3.13 RELIABILITY AND VALIDITY OF DATA

As the Cronbach’s alpha of six parameters (Problems related to finance, Problems related to production, Problems related to marketing, Problems related to other aspects, Expectation of SHG members, Assessment of SHG performance, Satisfaction of SHG members and Women empowerment through SHG) reveal .700 and more than .700 as alpha. So, it is confirmed that the data are highly reliable and valid for analysis. The following table shows that, the Cronbach’s alpha value for every dimension of business performance and women empowerment through SHG in Tamilnadu.

Table – 3.1

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Reliability</th>
<th>No of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems related to finance</td>
<td>.812</td>
<td>15</td>
</tr>
<tr>
<td>Problems related to production</td>
<td>.802</td>
<td>9</td>
</tr>
<tr>
<td>Problems related to marketing</td>
<td>.718</td>
<td>9</td>
</tr>
<tr>
<td>Problems related to other aspects</td>
<td>.739</td>
<td>12</td>
</tr>
<tr>
<td>Expectation of SHG members</td>
<td>.721</td>
<td>20</td>
</tr>
<tr>
<td>Assessment of SHG performance</td>
<td>.883</td>
<td>18</td>
</tr>
<tr>
<td>Satisfaction of SHG members</td>
<td>.705</td>
<td>20</td>
</tr>
<tr>
<td>Women empowerment through SHG</td>
<td>.717</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: Output generated from SPSS 20
3.14 ANALYTICAL TOOLS USED
Analysis of data is a critical part in social science researches. Successful analysis of data mainly depends on the reliability of data as well as usage of appropriate statistical tools. These two aspects of statistical analysis result in logical interpretation and conclusion. The present research has paid its attention on these two aspects carefully. Choice of suitable analytical tools relies on the nature and objectives of the study. The present study takes the following statistical tools to process the data:

3.14.1 Mean and standard deviation
Mean is one of the measures of central tendency that summarizes the data and discloses the feature of the data. It is a widely used statistical tool that discloses the selected characteristics of the data. In this study, the mean is applied to study the feature of the data. At the same time, the extent of reliability of the mean is a factor that is determined with the help of standard deviation. The standard deviation is a tool to measure variability of the data. Higher the value of the standard deviation lesser is the reliability of the data. So, the extent to what level the mean discloses the exact characteristics of the data are determined with the help of the standard deviation.

3.14.2 F test or Analysis of Variance (ANOVAs)
F test (popularly known as Analysis of Variance - ANOVA) is used when multiple sample case are involved. As the significance of the difference between the means of two samples can be judged through any test, the difficulty arises when one has to examine the significance of the difference amongst more than two sample means at the same time. Therefore, the F test has been selected as the appropriate tool for analysis.

3.14.3 Friedman test
The Friedman test is a non-parametric statistical test. Similar to the parametric repeated measures ANOVA, it detects the differences in treatments across multiple test attempts. It is used to test for differences between groups when the dependent variable being measured is ordinal.
3.14.4 Factor analysis
Factor analysis is a method used to transform a set of variables into a small number of linear composites, which have maximum correlation with original variables. Factor analysis is used to study the nature of products manufactured in MSMEs, in order to identify the major characteristics or factors considered important by the respondents. Statistics associated with factors analysis Bartlett’s test of sphericity can be used to test the null hypothesis to conclude that the variables are not correlated with the population. The test of sphericity is based on the Chi-square transformation of the determinant of the correlation matrix. Kaiser-Mayer-Olkin-measure of sampling adequacy index compares the magnitude of the observed correlation co-efficient to the magnitude of partial correlation co-efficient Eigen-values and communalities. A factor’s Eigen value or latent route is the sum of the squares of its factor loading. It helps us explain how well a given factor fits the data from all respondents on all the statements. Communalities are the sum of squares of a statement’s factor loading, i.e. it explains how much each variable is accounted for by the factors taken together. Bartlett’s test of sphericity and Kaiser Meyer Olkin measures of sample adequacy is used to test the appropriateness of the factor model.

3.14.5 Multiple regression analysis
Regression analysis is a mathematical measure of average relationship between two or more variables in terms of original units of data. Regression is used to create an equation (or) transfer function from the measurements of the system’s inputs and outputs acquired during a passive or active experiment.

3.14.6 Tree structured analysis
Graphical tree model displays are among the most useful, because they allow navigation through the entire tree as well as drill-down to individual nodes. Classification and regression trees are becoming increasingly popular for partitioning data and identifying local structure in small and large datasets.
3.14.7 Neural Network (NN) method
Neural Network method is a modeling technique used to model problems having parameters with complicated mapping relationships. NN is a computing system made up of a number of simple and highly interconnected processing elements, which processes information through its dynamic state response to external inputs.

3.14.8 Wilcoxon signed rank test
The Wilcoxon signed-rank test is a non-parametric statistical hypothesis test used when comparing two related samples, matched samples, or repeated measurements on a single sample to assess whether their population means ranks differ.

3.14.9 Structural Equation Modeling
Structural Equation Modeling is a very general, very powerful multivariate analysis technique that includes specialized versions of a number of other analysis methods as special cases. We will assume that you are familiar with the basic logic of statistical reasoning as described in Elementary Concepts. Moreover, we will also assume that you are familiar with the concepts of variance, covariance, and correlation; if not, we advise that you read the Basic Statistics section at this point. Although it is not absolutely necessary, it is highly desirable that you have some background in factor analysis before attempting to use structural modeling.

3.15 CONCLUSION
The present chapter provides a clear picture regarding the research methodology adopted in the present study. It gives a foundation and background to the research process. The logic behind the research is clear from the research design of the present study. And, the chapter finally provides the geographical description on the two districts viz., Thanjavur and Tiruchirappalli districts.