CHAPTER III

PROFILE OF THE STUDY AREA AND METHODOLOGY

3.1 PROFILE OF TAMIL NADU

Tamil Nadu is the eleventh largest state in India by area and it is the second largest state economy in India as on 2012. It is ranked 6th among the states in India according to the Human Development Index as on 2011. The state has the highest number (10.56 per cent) of business enterprises and stands the second in total employment (9.97 per cent) in India, compared to the population share of about six per cent. In the year 2013, Mr. Raguramarajan, Governor, RBI, ranked Tamil Nadu as the third most developed state in India based on a "Multidimensional Development Index".

Tamil Nadu is mostly dependent on monsoon rains and thereby is prone to droughts when the monsoons fail. The climate of the state ranges from dry sub-humid to semi-arid. The state has three distinct periods of rainfall:

- Advancing monsoon period, from June to September, with strong southwest winds;
- From October to December, with dominant north east winds;
- Dry season from January to May.

The annual rainfall of the state is about 945 mm (37.2 in) of which 48 per cent is through the north east monsoon, and 32 per cent through the south west monsoon. Since the state is entirely dependent on rains for recharging its water resources, monsoon failures lead to acute water scarcity and severe drought.

Tamil Nadu is the seventh most populous state in India. 44 per cent of the state's population live in urban areas, the highest among large states in India. The state has registered the lowest fertility rate in India in the year 2005–06 with 1.7 children
born for each woman, lower than required for population sustainability. As per 2011 Census, Tamil Nadu has a population of 7,21,38,568.

Tamil Nadu is the second largest contributor to India's GDP. Tamil Nadu's gross state domestic product for the year 2011-2012 was 4.28 lakh crore or $145,868 Million. The state has shown a growth of 9.4 per cent in the year 2011-2012. Tamil Nadu is the second most industrialised state in India. It ranks third in (FDI) approvals (cumulative 1991–2002) of ₹225,826 million ($5,000 million), next only to Maharashtra and Delhi constituting 9.12 per cent of the total FDI in the country. The per capita income in 2007–2008 for the state was ₹72,993 ranking the third in India with a population over 10 million and has steadily been above the national average.
TABLE 3.1
GROSS STATE DOMESTIC PRODUCT AT CONSTANT PRICES
(₹. In Crores)

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Year</th>
<th>GDP (in ₹)</th>
<th>Growth Rate</th>
<th>Share in India</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>2000–01</td>
<td>142,065</td>
<td>5.87%</td>
<td>7.62%</td>
</tr>
<tr>
<td>2.</td>
<td>2001–02</td>
<td>139,842</td>
<td>-1.56%</td>
<td>7.09%</td>
</tr>
<tr>
<td>3.</td>
<td>2002–03</td>
<td>142,295</td>
<td>1.75%</td>
<td>6.95%</td>
</tr>
<tr>
<td>4.</td>
<td>2003–04</td>
<td>150,815</td>
<td>5.99%</td>
<td>6.79%</td>
</tr>
<tr>
<td>5.</td>
<td>2004–05</td>
<td>219,003</td>
<td>11.45%</td>
<td>7.37%</td>
</tr>
<tr>
<td>6.</td>
<td>2005–06</td>
<td>249,567</td>
<td>13.96%</td>
<td>7.67%</td>
</tr>
<tr>
<td>7.</td>
<td>2006–07</td>
<td>287,530</td>
<td>15.21%</td>
<td>8.07%</td>
</tr>
<tr>
<td>8.</td>
<td>2007–08</td>
<td>305,157</td>
<td>6.13%</td>
<td>7.83%</td>
</tr>
<tr>
<td>9.</td>
<td>2008–09</td>
<td>320,085</td>
<td>4.89%</td>
<td>7.70%</td>
</tr>
<tr>
<td>10.</td>
<td>2009–10</td>
<td>350,258</td>
<td>9.43%</td>
<td>7.77%</td>
</tr>
<tr>
<td>11.</td>
<td>2010–11</td>
<td>391,372</td>
<td>11.74%</td>
<td>8.01%</td>
</tr>
<tr>
<td>12.</td>
<td>2011–12</td>
<td>428,109</td>
<td>9.39%</td>
<td>8.20%</td>
</tr>
</tbody>
</table>

Source: www.tamilnaduprofile.com
A glance of the Figure 3.1 highlights the growth of Gross Domestic Product of Tamil Nadu from 2001-02 to 2011-12. It has been increased from ₹ 142,065 crores in 2000-01 to ₹ 428,109 crores in 2011-12.
FIGURE 3.2
TAMIL NADU MAP
3.2 AREA OF THE STUDY

The present study penetrates to Virudhunagar district. The district was carved on 15\textsuperscript{th} March 1985 by trifurcation of the erstwhile composite Ramnad district with the headquarters at Virudhunagar. It is the birth place of the renowned Statesman Karma Veerar Thiru. K. Kamaraj. It is prestigious to say that the official emblem of the Tamil Nadu State Government is the Tower of the Andal Temple at Srivilliputtur, which is situated in Virudhunagar district.

The district headquarters is Virudhunagar town. It covers an area of 4,232 sq.km and is divided into eleven taluks. The Virudhunagar district is located between 9\textdegree 07 and 10\textdegree 22 North latitudes and 77\textdegree 22 and 79\textdegree 25 east longitudes. It is landlocked on all sides with no direct access to the sea. It is bound on the North by Madurai, on the North East by Sivagangai, on the East by Ramanathapuram and on the South by Tuticorin and Tirunelveli districts.

The climate of the region is semi arid tropical monsoon type. The temperature ranges from 20\degree c to 37\degree c. The area under cultivation accounts for 37 per cent of the total geographical area. Agriculture provides sustenance to 52 per cent of the working population.

For administrative convenience, the Virudhunagar district is divided into two revenue divisions one at Sivakasi comprising of Sivakasi, Srivilliputhur, Rajapalayam Taluks and the other at Aruppukottai comprising of Aruppukottai, Virudhunagar and the Thiruchulli Taluks. The district comprises of eleven taluks, 11 panchayat unions, 36 revenue firkas, 600 revenue villages, 464 village panchayats, 10 town panchayats and 6 municipalities. Figure 3.3 shows the Virudhunagar district map.
FIGURE 3.3
VIRUDHUNAGAR DISTRICT MAP

Virudhunagar District
Blocks

- Watrap
- Sripilliputtur
- Sivakasi
- Virudhunagar
- Aruppukottai
- Kariapatti
- Narikudi
- Rajapalaiyam
- Venbottai
- Sattur
- Tiruchuli
According to the Directorate of Statistics, Chennai, the district covers an area of 4,270, three square kilometers or 1648.8 square miles. This district occupies the fifteenth rank among the districts of the state of Tamil Nadu with regard to its size.

Table 3.2 explains the total geographical area of the district.

**TABLE 3.2**

**TOTAL GEOGRAPHICAL AREA OF THE DISTRICT**

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Status</th>
<th>Sq. Km</th>
<th>Sq.Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rural</td>
<td>4,179.4</td>
<td>1,613.7</td>
</tr>
<tr>
<td>2.</td>
<td>Urban</td>
<td>90.9</td>
<td>35.1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>4,270.3</td>
<td>1,648.8</td>
</tr>
</tbody>
</table>

Source: Directorate of Statistics, Chennai, 2011

According to 2011 census, the district has a population of 19,43,309. The male population is 9,74,569 (50.15 percent) while the female population is 9,68,740 (49.85%). In the district, 9,79,33 persons constituting 62.58 per cent of the total population live in rural area and the rest of the 5,85,704 persons constituting 37.42 per cent of the total population live in urban area.

As per 2011 census, the literacy level of the district is 80.75. The percentage of male literacy is 88.46 and female literacy is 73.14.

Agriculture is the main occupation of the people of this district. As there are no perennial water resources in the district, farmers depends upon the seasonal rains. The major food crops grown in this district are paddy, maize, corn, ragi, chillies, groundnuts, sugarcane, cotton and banana. Agriculture Research Stations for cotton and palmyra are functioning in Srivilliputhur. In the district, 46.36 per cent of the total geographical area is being utilized for cultivation purpose and the net area sown is 192,820 hectares.
The establishment of textile mills, cement factories and a number of industries in the small and medium sectors coupled with the encouragement given by the State Government in the form of incentives and setting up of industrial centers have accelerated the rate of industrialization in the district. Over 70 per cent of the total population of matches and fireworks in India is manufactured in Virudhunagar district.

By the end of 2011-12, there are 144 branches of the commercial banks in the Virudhunagar district.

3.3 METHODOLOGY

An appropriate methodology has been used to fulfill the objectives of the study.

3.3.1 Period of Study

The study has covered a period of seven months from September 2012 to March 2013.

3.3.2 Construction of Tools and Pre-test

The researcher framed the interview schedule used in this study. The variables used in this study were identified during the discussions with the Assistant Project Officer of the Mahalir Thittam, Manager of the NABARD and the NGOs and during the preliminary interview with a few selected self-help groups.

The variables thus identified by the researcher were operationalised. The schedule for the members of the SHGs was pre-tested with the help of 25 members of the SHGs. In the light of their comments, the interview schedule was further modified and finalised.

3.3.3 Collection of Data

Field work for this study was carried out by the researcher with the help of the NGOs.
The researcher used interview schedule for the collection of data from the SHGs members. The completed schedule was checked and verified.

The secondary data were collected from books, journals, RBI bulletins, NABARD’s annual reports and reports of the project implementation unit of the Mahalir Thittam in the Virudhunagar district.

3.3.3 Choice of the study area

Virudhunagar is a traders’ town. It has been involved in the marketing and distribution of commodities since British times and has a well developed network for purchase of goods and commodities. In this district, the rate of women literacy is high. Women are also highly motivated to engage in business activities. As a result, there is a mushroom growth of SHGs. SHGs have become a vital organ in such a network facilitating the vibrant growth. Hence, Virudhunagar district is chosen for the study of women empowerment.

3.3.4 Sampling Design

A multi stage procedure was adopted for the study. The details are furnished below:

Virudhunagar district consists of eleven taluks as on 2012. According to the facts disclosed by Mahalir Thittam office, Virudhunagar, the eleven blocks of Virudhunagar district consists of 14,513 SHGs.

Among these 14,513 SHGs; the rural area comprises of 11,588 SHGs and the urban area consists of 2,925 SHGs.

With the help of the officials of the Mahalir Thittam, the SHGs that are working effectively for five years and above were identified and opted for the study.
TABLE 3.3

SAMPLING DESIGN OF THE STUDY

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Block</th>
<th>No. of SHGs five years or above</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Rural</td>
</tr>
<tr>
<td>1.</td>
<td>Rajapalayam</td>
<td>9</td>
</tr>
<tr>
<td>2.</td>
<td>Srivilliputur</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td>Watrap</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Sivakasi</td>
<td>11</td>
</tr>
<tr>
<td>5.</td>
<td>Vembakottai</td>
<td>3</td>
</tr>
<tr>
<td>6.</td>
<td>Sattur</td>
<td>5</td>
</tr>
<tr>
<td>7.</td>
<td>Virudhunagar</td>
<td>8</td>
</tr>
<tr>
<td>8.</td>
<td>Aruppukottai</td>
<td>7</td>
</tr>
<tr>
<td>9.</td>
<td>Kariapatti</td>
<td>1</td>
</tr>
<tr>
<td>10.</td>
<td>Thiruchuli</td>
<td>6</td>
</tr>
<tr>
<td>11.</td>
<td>Narikudi</td>
<td>1</td>
</tr>
<tr>
<td>12.</td>
<td>Total</td>
<td>57</td>
</tr>
</tbody>
</table>

Source: Primary data

On the basis of the SHGS which are working for a period of five years and above, 5,758 SHGs have been operating effectively in rural area and 1,825 SHGs have been functioning in urban area.

In the present study, 10 per cent have been selected both in rural and urban areas, that is about 57 SHGs from rural area and 18 SHGs from urban areas have been considered under the present preview.

Finally, applying lottery method, 300 respondents are selected by drawing lots of four members from each group, 300 respondents have been selected.
3.3.4 Tools of Analysis

The study is primarily analytical in nature. Statistical tools have been employed for the purpose of making an analysis of the data collected.

The first objective “To assess the level of development of women SHGs by Micro Finance in Virudhunagar District” has been analysed with the help of trend analysis, Correlation and Compound Growth Rate.

3.3.4.1 Trend

The secular trend is a basic tendency of a component to be either more positive or negative. It describes the pattern of behaviour in future which has characterised the series in the past. In the present study, the trend and growth of self help groups in Tamil Nadu and Virudhunagar district has been estimated with linear regression equations as they exhibit linear relationship with time. A trend equation fit for the growth of SHGs and bank credit in Tamil Nadu is

\[ Y = a + bt \]

Where

\[ Y = \text{Growth of SHGs} \]

\[ t = \text{Time in years} \]

Exponential growth rates have been worked out by using the formula; Compound Growth Rate (CGR) is worked out by using the formula.

\[ \text{CGR} = [\text{anti log } b-1)] \times 100 \]

Correlation has been used to analyse the relationship between actual and estimated trend values.

The second objective “To study the socio economic conditions of SHG members and their performance in the study area” has been analysed with the help of percentage analysis, Kolmogorov Smirnov test and Multi Dimensional Scaling technique.
3.3.4.2 Kolmogorov Smirnov test

Kolmogorov Smirnov test has been used to measure the effectiveness of the training programme. For the purpose of analysis, whether there is any difference in the important ratings given by the respondents on various elements, the hypotheses have been formulated. The formulated hypotheses have been tested by the researcher with the help of Kolmogorov Smirnov test. (KS test).

Formula:

\[ D = O - E \]

D = refers to calculated value

O = refers to cumulative observed proportions and

E = refers to cumulative expected proportion

Cumulative observed proportion is calculated on the basis of observed frequency (observed numbers).

The total number of respondents is 300. For example, if 66 members have chosen “Strongly Agree” as their opinion in the case of first statement, the observed proportion is calculated by dividing 66 by the 300 respondents. The resultant value (0.22) is the observed proportion. For all gradations, the same method of calculation is followed. On the basis of observed proportion, cumulative observed proportion is calculated.

Cumulative expected proportion is calculated on the basis of the expected proportion. Since there are five gradations, for each gradations 0.20, (1.00/5) is assigned as the expected proportion. On the basis of the expected proportion, cumulative proportion is calculated.

For each gradation, the difference between cumulative observed proportion and cumulative expected proportion is calculated. The largest difference will be taken as calculated value. The calculated value is compared with the table value.
If the calculated value is greater than the table value, the null hypothesis is rejected. On the other hand, if the calculated value is less than the table value, the null hypothesis is accepted.

### 3.3.4.3 Multi Dimensional Scaling (MDS)

Multi Dimensional Scaling (MDS) is an important analytical tool for the purpose of grouping. In general, the goal of the analysis is to detect meaningful underlying dimensions that allow the researcher to explain observed similarities or dissimilarities (distances) between the investigated objects. With MDS, one may analyse any kind of similarity or dissimilarity matrix.

MDS is a procedure to “rearrange” objects in an efficient manner, so as to arrive at a configuration that best approximates the observed distances. It actually moves objects around in the space defined by the requested number of dimensions and checks how well the distances between objects can be reproduced by the new configuration. In more technical terms, it is used as function minimization algorithm that evaluates different configurations with the goal maximizing the goodness-of-fit (or minimizing “lack of fit”). The most common measure that is used to evaluate how well (or poorly) a particular configuration reproduces the observed distance matrix is the stress measure. The raw stress value Phi of a configuration is defined by:

\[
\text{Phi} = \partial [d_{ij} - f(\partial_{ij})^2]
\]

In the formula, \(d_{ij}\) stands for the reproduced distances, given the respective number of dimensions and \(\partial_{ij}\) (delta \(ij\)) stands for the input data (observed distances). The expression \((\partial_{ij})\) indicates a non-matric, monotone transformation of the observed input data (distances). Thus, it attempts to reproduce the general rank ordering of distances between the objects in the analysis.

Multidimensional scaling (MDS) is a means of visualizing the level of similarity of individual cases of a dataset. It refers to a set of related techniques used in particular to display the information contained in a graph. An MDS aims to place
each object in $N$-space such that the object distance in between is are preserved. Each object is then assigned in each of the $N$ dimensions. The number of dimensions of an MDS plot $N$ can exceed 2 and is specified. This technique is used for measuring the social empowerment and success and failure of the group.

The third objective “To assess the level of social, economical and political empowerment of SHG members in Virudhunagar district” has been analysed by using Percentage analysis, paired ‘t’ test, Garrett’s ranking technique, Weighted ranking technique, Multi Dimensional Scaling technique, McNemmer and Likert’s five point scaling technique.

3.3.4.4 Paired ‘t’ test

Paired ‘t’ test is used to test the significant differences between the ‘means’ of the quantitative variables like income, expenditure, savings, mode of savings and loan amounts before and after the joining of the SHGs as its members.

The paired ‘t’ test based on paired observations has been defined by the formula:

$$t = \frac{\bar{d} \sqrt{n}}{S}$$

where,

\[ \bar{d} = \text{The mean of the differences} \]
\[ S = \text{The standard deviation of the differences} \]
\[ n = \text{The number of sample women beneficiaries} \]

The value of $S$ is calculated as follows:

$$S = \frac{\sum d^2 - n(\bar{d})^2}{n - 1}$$

Degrees of freedom = $n-1$
3.3.4.5 Garrett’s Ranking Technique

Garrett’s ranking has been used for analyzing the purpose of obtaining the loan. The formula used for this ranking technique was:

\[
\text{Per cent position} = \frac{100 \ (R_{ij} - 0.5)}{N_j}
\]

Where,

\(R_{ij}\) = Rank given for the item by the \(j^{th}\) individual,
\(N_j\) = Total rank given by the \(j^{th}\) individual.

By referring to Garrett’s table, the present position estimated is converted into scores. The score on various respondents is added and mean values are calculated. The mean values are arranged in descending order. The purpose with highest mean value is considered to be the most important, followed by the second, the third and so on.

3.3.4.6 Likert’s Scale

To study the economic empowerment of sample women beneficiaries, 5 statements have been framed for each statement, Likert’s five point scale has been used. The scores for the statement are Strongly Agree - 5, Agree - 4, Moderately Agree - 3, Disagree - 2 and Strongly Disagree - 1. By using this scale, the scores intensity value has been calculated for each statement.

3.3.4.7 McNemar Test

With a view to find out whether there is any significant difference in the political empowerment and amenities before and after the period of joining the SHGs, the McNemar test has been applied.
### Before Joining SHGs | After Joining SHGs

<table>
<thead>
<tr>
<th>Did not favour</th>
<th>Favoured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favoured</td>
<td>A</td>
</tr>
<tr>
<td>Did not favour</td>
<td>C</td>
</tr>
</tbody>
</table>

$$x^2 = \frac{(A-D)^2}{(A+D)} \text{ with d.f = 1}$$

The fourth objective “To measure the psychological empowerment of Self Help Group members in the study area” has been analysed by adopting McNemar, Cronbach alpha and paired ‘t’ test.

### 3.3.4.8 Cronbach’s Alpha

Cronbach's alpha is a measure of internal consistency, which explains how closely related a set of items are in a group. A "high" value of alpha is often used as evidence that the items measure an underlying construct. However, a high alpha does not imply that the measure is unidimensional. Cronbach's alpha is not a statistical test - it is a coefficient of reliability or consistency.

The fifth objective “To identify the problems of Micro Finance and give suitable suggestions to empower women in Virudhunagar district” has been analysed by using Factor analysis.

### 3.3.4.9 Factor Analysis

To find out the major problems of the self-help group members regarding Micro Finance, the factor analysis approach is used.

Mathematically, factor analysis is somewhat similar to the multiple regression analysis. Each variable is expressed as a linear combination of the underlying factors. The amount of variance a variable shares with all the other variables included in the analysis is referred to as communality. The co-variation among the variables is described in terms of a small number of common factors together with a unique factor.
for each variable. These factors are not over observed. If the variables are standardized, the factor model may be represented as:

\[ X_i = A_{i1} F_1 + A_{i2} F_2 + A_{i3} F_3 + \ldots + A_{im} F_m + V_i U_i \]

Where,

- \( X_i \) = \( i \)th standardized variable,
- \( A_{ij} \) = Standardized multiple regression coefficient of variable ‘\( i \)’ on common factor ‘\( j \)’
- \( F \) = Common factor,
- \( V_i \) = Standardized regression coefficient of variable ‘\( i \)’ on unique factor ‘\( i \)’
- \( U_i \) = The unique factor for variable ‘\( i \)’
- \( m \) = Number of common factors

The unique factors are uncorrelated with each other and with the common factors. The common factors themselves could be expressed as linear combinations of the observed variables.

\[ F_i = W_{i1} X_1 + W_{i2} X_2 + W_{i3} X_3 + \ldots + W_{ik} X_k \]

Where,

- \( F_i \) = Estimate of \( i \)th factor
- \( W_{i} \) = Weight or factor score coefficient
- \( K \) = Number of variables.

It is possible to select weights or factor score coefficients so that the first factor explains the largest portion of the total variance. Then a second set of weights could be selected, so that the second factor accounts for most of the residual variance, subject to being uncorrelated with the first factor. This same principle could be
applied to select additional weights for the additional factors. Thus, the factors could be estimated so that their factor scores, unlike the value of the original variables, are not correlated. Furthermore, the first factor accounts for the highest variance in the data, the second factor for the second highest variance in the data and so on.

**References:**

2. [www.tamilnaduprofile.com](http://www.tamilnaduprofile.com)
3. [www.virudhunagardistrictprofile.com](http://www.virudhunagardistrictprofile.com)