CHAPTER – III

RESEARCH DESIGN

The following objectives are framed for the purpose of the present study.

Objectives

1. To identify the extent of poverty among the households of different occupational, caste and village categories in respect of distribution of wealth, income and consumption expenditure.

2. To analyze the status of economic inequality and its causative factors in the study villages.

3. To examine the magnitude and intensity of poverty among the households and villages.

4. To assess the impact of anti-poverty programmes on income and employment generation.

5. To study the respondents views on status of food security and factors promoting food security.

6. To suggest some rational policy measures to reduce the intensity of poverty and enhancement of actual diversification in the study villages.
**Hypotheses**

The following hypotheses are formulated on the basis of content and meaning of the framed objectives and the appropriate statistical tools tests.

1. There is a glaring inequality in the distribution of wealth, income and consumption expenditure among the households of different occupational, caste and village categories.

2. The extent of economic inequality is associated with the placement of households at different levels of occupational and caste hierarchy.

3. There is a significant inter-village variation with respect to explanatory variables on household consumption expenditure.

4. There is an association between occupational status of the respondents and the intensity of poverty in the study villages.

**Methodology**

This study aims at analyzing the magnitude and extent of poverty in the rural areas of Tiruchirappalli district. Some pockets of the districts are backward and some pockets of the districts are developed agriculturally. Hence, there is need to analyze relative status of poverty in the developed blocks and backward blocks. This type of analysis helps the planners to identify the socio-economic causes and associated reasons behind the occurrence of economic inequality in the districts. This study is primarily analyzing the poverty in the exploratory
framework. Then the household’s socio-economic characteristics are correlated with the causes and magnitude of poverty and thereby it gives analytical orientation to this study. Thus, this study is partly exploratory and partly analytical nature.

**Sampling**

Tiruchirappalli district has 7 blocks and among them 4 blocks are selected for the purpose of present study. Among the 4 blocks, 2 blocks are agriculturally developed viz., Lalgudi and Musiri and 2 blocks are agriculturally backward viz., Thuraiyur and Manapparai in the first stage of sampling. In the second stage of sampling two villages from each block is selected as sample. From Thuraiyur block, Vannallur and Ammapatti villages are selected. Thirumangalam and Valavanur villages are selected from the Lalgudi block. From Manapparai block Samudrum and Madampatti villages are selected as sample. Valayeduppu and Pullivalam villages are selected from the Musiri block. From each village 10 per cent of the households are selected as sample. Thus totally 381 respondents are selected from the 8 villages by adopting multistage random sampling method. Further stratification is also adopted with a view to give relative weightage to their households of different occupational background.

**Concepts and Definitions**

**Landless Labourers**

The households do not have any farming land.
**Marginal Farmers**

This group comprises the households owning land between 0-2.5 acres.

**Small Farmers**

This group comprises the households owning land between 2.51-5.0 acres.

**Medium Farmers**

This group comprises the households owning land between 5.01-10.0 acres.

**Large Farmers**

This group comprises the households owning land between 10.01 and above acres.

**Artisans**

This group comprises the households belonging to potmakers, carpenters, barbers etc.

**Others**

This group comprises the households belonging to various organized and unorganized non-farm occupational categories.

**Household Income**

The income of a household was computed as the sum of earnings of all members of the household, from all sources during the reference
period. The various sources of income for households, taken into consideration are: agricultural employment, non-agricultural employment, income from farm activity and non-farm activity. Income from agricultural includes income from farm-cultivation, fruits and vegetables and rents. Gross income from farm was derived as gross receipts minus cost of cultivation. As regard income from wages, it has been computed separately for farm and non-farm activities, based on payment received in cash and kind as well. Non-farm income includes the income from assets like house property, lending and financial assets like deposits in banks and companies, shares and securities and units.

**Poverty Line**

The cut off line demarcating the poor and the non-poor has been fixed on food consumption norm in terms of calorie intake, which in turn is expressed in money terms. The present exercise has taken Rs. 4055 per head per year in current prices as the basis, which is the cost of nutritionally adequate diet necessary to obtain 2400 calories per day.

**Liabilities**

Net borrowings of the households are derived as borrowing during the reference period deducting repayments. Net lending is calculated as amounts lent plus interest accrued on all lending minus repayments received, both capital and interest during reference period.
Wealth

Wealth covers physical and financial assets. The components of wealth in the study include: land, building, other structures like well, irrigation structures oil engine, tractor, motor, pump set, livestock and durables etc.

Statistical Tools

In order to study the economic inequality in the study village, an index is constructed by taking three indicators relating to per capita wealth, income and consumption expenditure distribution. In order to study the intensity of poverty four measures have been applied. They are (i) Head Count Ratio (ii) Income/Poverty Gap Ratio (iii) Gini Concentration Ratio and (iv) Sen’s Index.

To study the influence of certain chosen explanatory variables on household consumption expenditure. Multiple regression models are applied. In this model explanatory variables such as age, educational level of the households, family size farm income and non-farm income are taken. This model is individually worked out for the caste, village, and occupational groups respectively.

In order to study the association between caste status occupation and village status on poverty, the chi-square test is applied. Further analysis of variance is applied also to study the level of variation attributed by caste status, occupational level and village status on household consumption expenditure.
Multiple Regression

Since poverty line is conceptualized in terms of consumption expenditure it is proposed to examine the influence of the chosen variables viz., caste, education, family size, age, farm income and non-farm income of the respondents over the consumption expenditure. For this purpose the multiple regression analysis is used taking the consumption expenditure as the regression and the others as explanatory variables. The linear regression model is formed is

\[ Y = a + b_1X_1 + b_2X_2 + \cdots + b_nX_n + E \]

\( Y \) = Consumption Expenditure
\( a \) = Constant
\( b_1-b_n \) indicates the regression co-efficients of the given independent variables.

\( E \) is the residual error
\( X_1 = \text{Caste} \)
\( X_2 = \text{Age} \)
\( X_3 = \text{Education} \)
\( X_4 = \text{Family Size} \)
\( X_5 = \text{Farm income} \)
\( X_6 = \text{Non-farm income} \)
Using the data set relating to these variables, the multiple regression analysis has been carried out and the results are given in the following tables for the eighth study villages.

In order to study the variation within the sample and between sample the anova two way model is applied. It is written as,

The ANOVA two way model was applied to study the variations within samples and variations between samples. It was applied to study the variations in demographic and economic characteristics of consumers in their repeat purchase behaviour and satisfaction derived.

The ANOVA two way model is as follows

<table>
<thead>
<tr>
<th>Sources of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Sum of Squares</th>
<th>Ratio of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Samples</td>
<td>SSC</td>
<td>(c - 1)</td>
<td>MSC = SSC / (c - 1)</td>
<td>MSC / MSE</td>
</tr>
<tr>
<td>Between Rows</td>
<td>SSR</td>
<td>(r - 1)</td>
<td>MSR = SSR / (r - 1)</td>
<td>MSR / MSE</td>
</tr>
<tr>
<td>Residual or Error</td>
<td>SSE</td>
<td>(c - 1) (r - 1)</td>
<td>MSE = SSE / (r - 1) (c - 1)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>SST</td>
<td>n - 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SSC = Sum of Squares between Columns
SSR = Sum of Squares between Rows
SSE = Sum of Squares due to Error
SST = Total Sum of Squares

The sum of squares for the source 'Residual' was obtained by subtracting from the total sum of squares, the sum of squares between columns and rows, i.e.,

\[ SSE = SST - (SSC + SSR) \]
The total number of degrees of freedom = \( n - 1 \) or \( r - 1 \)

Where \( c \) refers to number of columns, and \( r \) refers to number of rows,

- Number of degrees of freedom between columns = \( (c - 1) \)
- Number of degrees of freedom between rows = \( (r - 1) \)
- Number of degrees of freedom for residual = \( (c - 1)(r - 1) \)

The total sum of squares, sum of squares between columns and sum of squares between rows were obtained in the same way as before.

Residual or error sum of square = Total sum of squares - sum of squares between columns - sum of squares between rows.

The \( F \) values were calculated as follows:

\[
F(v_1, v_2) = \frac{MSC}{MSE}
\]

Where,

\[
v_1 = (c - 1) \text{ and } v_2 = (c - 1)(r - 1)
\]

\[
F(v_1, v_2) = \frac{MSR}{MSE}
\]

Where,

\[
v_1 = (r - 1) \text{ and } v_2 = (c - 1)(r - 1)
\]

It should be carefully noted that the \( F \) value may not be the same in both cases, viz., \( v_1 = (c - 1) \) and \( v_2 = (r - 1) \).

The calculated values of \( F \) were compared with the table values and logical conclusions were drawn.
It would be clear from above that in problems involving two-way classification, 'Residual' is the measuring rod for testing significance. It represents the magnitude of variation due to forces called 'chance'.

In order to study the association between socio-economic status of the respondents and the views on food security and poverty, the chi-square model is applied. It is written as,

$$\chi^2 = \frac{\sum (O - E)^2}{E}$$

Where

- $O$ = observed frequencies
- $E$ = expected frequencies

Further, percentages and averages are widely applied in this study depending on requirement of the situation. Diagrammatic representation is used to describe the sampling design.

In order to study the level of economic inequality the index is constructed as follows:

$$IE = \frac{1}{n} \cdot \frac{\text{Village Indicator Value}}{\text{Regional Average}} \times 100$$

$IE = \text{Index of economic inequality}$

$IE = 1/n \cdot Ui$

$n = \text{number of indicators of economic inequality}$

$Ui = \text{index for the ith indicator in the village}$
The value of each of the select indicators for chosen villages is taken as an average value of the corresponding indicator at the regional level. Here the value of regional level denotes that corresponding to the total indicators value put together of the selected villages.

In order to show the economic inequality with respect to each indicator, the co-efficient of variation is worked out. It is written as

\[
C.V = \frac{\sigma}{\chi} \times 100
\]

Where,

- \( C.V \) = Co-efficient of variation
- \( \sigma \) = Standard deviation
- \( \chi \) = Mean

The per cent of variation in wealth, income and consumption expenditure is explained with the help of co-efficient of variation.

**Limitation**

This study analyses poverty only with reference to 8 villages in Tiruchirappalli district. The studying of all the villages in Tiruchirappalli district is not possible at the level of an individual researcher owing to constraints imposed by resource in terms of time, money and efforts. In this study impact of poverty alleviation measures is not directly analyzed.
Chapterization Scheme

The first chapter deals with Introduction and Statement of the Problem.

The second chapter deals with Conceptual Discussion.

The third chapter devotes the Review of Literature.

The fourth chapter outlines the Research Design of the Study.

The fifth chapter narrates the Profile of the Study Area.

The sixth chapter deals with Household Characteristics.

The seventh chapter deals with Analysis of Poverty.

The last chapter is Findings and Conclusion.