CHAPTER – III

METHODOLOGY

The methodology adopted in the present study is discussed under the following heads:

I. Profile of the Selected district
II. Area of the study
III. Selection of the Sample
IV. Data Base of the Study
V. Period of Study
VI. Techniques of Analysis
VII. Limitations of the Study

I. Profile of the Selected District

Coimbatore district, which lies in the western part of Tamil Nadu bordering the Western Ghats, is surrounded by The Nilgiris in the west and southwest, Erode district in the north and Dindigul district in the east. Coimbatore district has two revenue divisions namely Coimbatore and Pollachi, six taluks namely Coimbatore (North), Coimbatore (South), Mettupalayam, Sulur, Pollachi and Valparai, 12 blocks and 227 Panchayat villages. The city is divided into 100 wards and these wards are grouped into five zonal ward committee. The district has a geographical area of 7469 sq.kms. The decadal growth rate of population during 1981 – 91 was 14.65 percent, 20.4 percent during 1991 – 2001 and 17.64 percent during 2001 – 2011. Coimbatore district is fed with water from Noyal, Siruvani, Bhavani and Amaravathi. Siruvani, world's second purest water body is the main source of water in the city.

With more than 25,000 small, medium and large industries, the city's primary industries are engineering and textiles. Coimbatore is called the "Manchester of South India" due to its extensive textile industry, fed by the surrounding cotton fields. The district also houses the country's largest amount of hosiery and poultry industries. The city has two special economic zones (SEZ), the Coimbatore Hi-Tech Infrastructure (CHIL) SEZ and the Coimbatore TIDEL Park and at least five more SEZs are in the pipeline. As of 2005, when Tirupur was a part of Coimbatore district, Coimbatore was the highest revenue earning district in Tamil Nadu. In 2010, Coimbatore ranked 15th in the list of most competitive (by business environment) Indian cities.

According to 2011 census, total population of the district is 3,458,045out of which, 8, 39,105 live in rural area and 2,618,940 live in urban areas. The number of male population stands at 1,729,297as against the female population of 1,728,748. The literacy rate of the district as per 2011Census was 83.98 percent, with male literacy being 89.06 percent and female literacy 78.92 percent.

Coimbatore district is ranked 7th place among the highest population size of the State. The urban population in the district is 75.7 percent, the third highest among the district in the State. The district sex ratio of 1000 is higher than the State sex ratio of 996. The district literacy rate (84.0 percent) is higher than the State literacy rate (80.1 percent).

The salient features of Coimbatore district is summarized in table 3.1.

TABLE 3.1

STATISTICAL INDICATORS OF COIMBATORE DISTRICT - 2011

STATISTICAL INDICATORS	
Population (persons)	3,458,045
Male (persons)	1,729,297
Female (persons)	1,728,748
Density of population (sq.km)	731
Area (sq.km)	4,732
Literacy (persons)	2,635,907
Male literates (persons)	1,394,790
Female literates (persons)	1,241,117
Literacy rate (percent)	83.98
Total workers (persons) (2001 census)	937314
Male workers (persons)	627693
Female workers (persons)	309621
Rural workers (persons)	436831
Urban workers (persons)	500483
Cultivators (persons)	98364
Agricultural labourers (persons)	211056
Household Industry (persons)	30381
Other workers (persons)	510302
Marginal workers (persons)	87211
Work participation rate (percent)	39.8
Sex ratio (female per 1000 males)	1000

Source: Census of India, 2011

II. Area of the Study

The study is restricted to Coimbatore district of Tamil Nadu as more number of beneficiaries relied upon MGNREGA and the scheme was successfully operating in the district.

The MGNREGA was introduced in the district in the year 2008 – 2009 to eradicate poverty by extending employment opportunities to the poor people. The progress of MGNREGA scheme in the last five financial years in Coimbatore is presented in table 3.2.

TABLE 3.2

THE PROGRESS OF MGNREGA SCHEME IN COIMBATORE

Progress	FY 2016-2017	FY 2015-2016	FY 2014-2015	FY 2013-2014	FY 2012-2013
Approved Labour Budget [In Lakhs]	25.37	29.22	60	65.53	62.12
Person days Generated so far[In Lakhs]	27.46	33.79	24.22	54.29	57.63
SC person days Percentage as of total person days	35.94	34.7	33.74	38.82	41.26
ST person days Percentage as of total person days	1.88	1.95	1.92	1.73	2.05
Women Person days out of Total (percent)	90.45	88.11	89.18	89.09	82.61
Average days of employment provided per Household	41.21	46.3	37.23	56.07	47.71
Average Wage rate per day per person(Rs.)	166.45	152.61	138.61	135.15	119.16
Total No of HHs completed 100 Days of Wage Employment	1,312	6,075	1,991	11,578	19,789
Total Households Worked[In Lakhs]	0.67	0.73	0.65	0.97	1.21
Total Individuals Worked[In Lakhs]	0.7	0.77	0.69	1.15	1.46
Differently abled persons worked	307	323	331	564	571

Source: www.nrega.nic.in

The district has an area of 4723 sq.kms of the state's geographical area, with a scheduled tribe population of 28342 as per the 2011 census. The agricultural practices are very poor in the tribal areas of the state due to unfavorable pattern of land holdings, poor cropping patterns, crude agricultural implements and absence of irrigational facilities. Tribal population in the district were forced to depend upon in the primitive agriculture, partly due to their inability to take part in non-agricultural occupations and partly due to non-availability of viable employment opportunities in own locality.

The district has been introducing and implementing a number of programmes for providing better livelihood to STs, but insufficient awareness and lack of organized efforts seems to be the root causes of socio- economic backwardness tribal population. There have been limited studies done on the awareness and impact of MGNREGA on scheduled tribe population in Coimbatore district. Against this background, the present study has been carried out in Coimbatore district to examine the awareness and the impact of MGNREGA on socio – economic conditions of tribal's in Coimbatore district.

III. SELECTION OF THE SAMPLE

The study adopted multistage sampling technique in selecting the sample. The schematic presentation of the sample selection is shown in Figure 3.1. In the first stage, out off twelve blocks in Coimbatore district, two blocks, namely Karamadai and Periyanaickenpalayam blocks were purposively selected where there was larger concentration of scheduled tribe population and maximum number of job cards being issued. About 2360 ST households in Karamadai, about 1287 ST households in Periyanaickenpalayam were issued job cards under MGNREGA (As shown in table 3.3). In the second stage, village Panchayat from each block was selected based on their participation in MGNREGA. Out of seventeen village Panchayat s in Karamadai block, three villages Panchayat were selected namely, Tholampalayam, Nellithurai and Velliangadu, where the proportion of ST households getting job cards was highest (As shown in Annexure – I). Similarly, out of nine village Panchayat in Periyanaickenpalayam block two village Panchayat were selected namely, 24.Veerapandi and Naickenpalayam, where the proportion of ST population with job cards was highest (As shown in Annexure – I). In the third stage, from the selected five village Panchayat s, the households were proportionately selected on the basis of total ST population with job cards in each village. Out of the total population 2927, a sample of 500 constituting 6 percent of the total population constituted the sample size. In Nellithurai 86 households, in Tholampalayam 114 households, in Velliangadu 82 households, in No.24.Veerapandi 149 households and in Naickenpalayam

69 households, who were willing to co – operate and supply the needed information were selected. Totally 500 households were selected for field survey from these five village Panchayat h (Table 3.4).

TABLE – 3.3

BLOCK WISE ST POPULATION AND

CUMULATIVE NUMBER OF ST HOUSEHOLDS ISSUED JOB CARDS

S.No	Panchayat Union	Total ST population	Cumulative number of ST households issued with job cards
1	Annaimalai	3637	815
2	Annur	36	1
3	**Karamadai**	**7813**	**2360**
4	Kinathukadavu	1567	78
5	Madukkarai	752	181
6	**Periyanaickenpalayam**	**3854**	**1287**
7	Pollachi North	876	44
8	Pollachi South	177	44
9	Sarkarsamakulam	14	0
10	Sulthanpet	13	32
11	Sulur	79	54
12	Thondamuthur	747	750
Total		**19565**	**5646**

Source: www.nrega.nic.in as on 23rd December, 2013

The proportion of the households surveyed in each village is shown in the table 3.4.

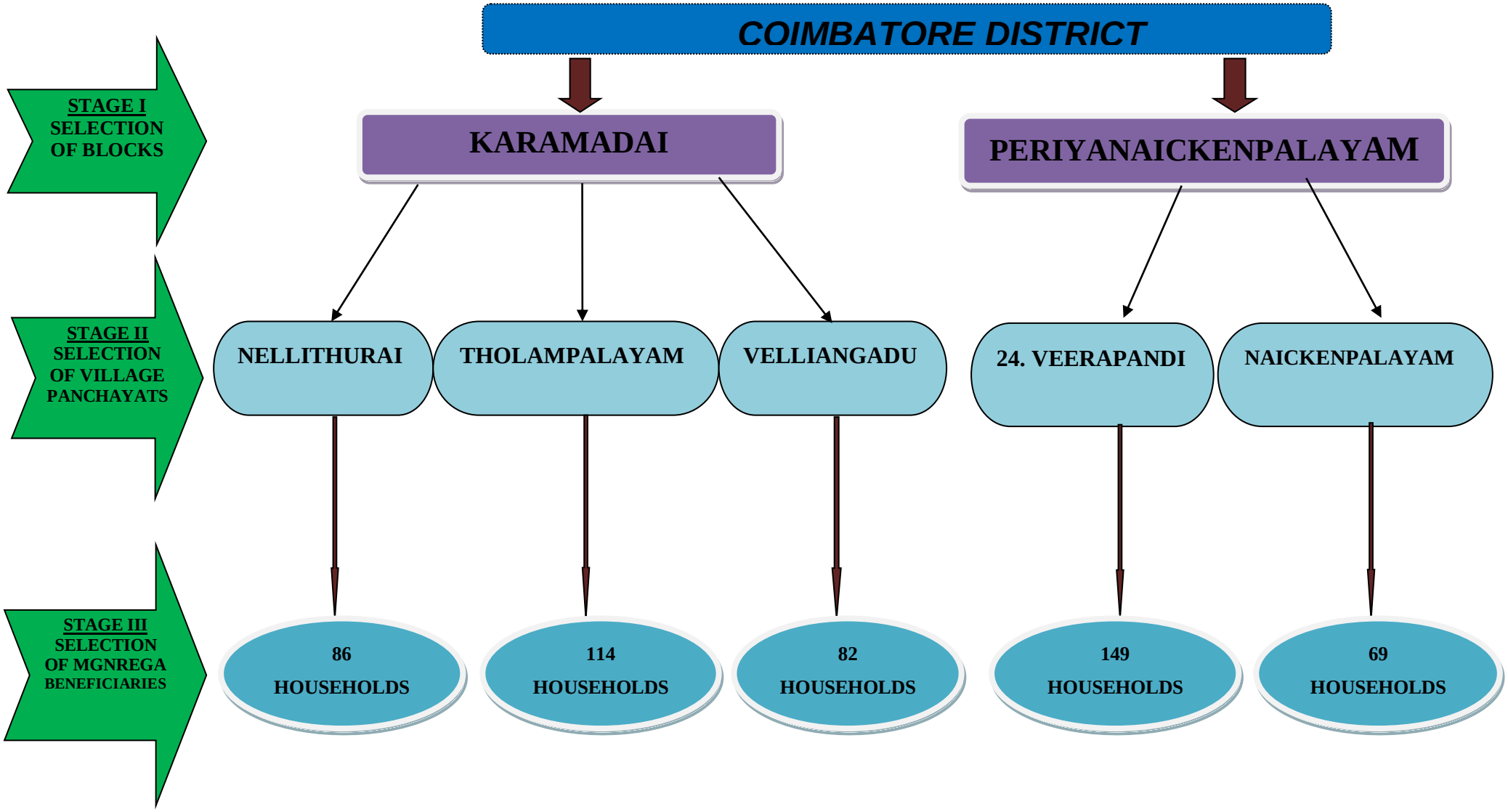
TABLE – 3.4

NUMBER OF HOUSEHOLDS SELECTED ON EACH VILLAGE PANCHAYAT

S.No	Village Panchayat	Cumulative Number of households issued job cards	Number of ST Households selected
1	NELLITHURAI	503	86
2	THOLAMPALAYAM	668	114
3	VELLIANGADU	477	82
4	24.VEERAPANDI	873	149
5	NAICKENPALAYAM	406	69
	Total	**2927**	**500**

FIGURE – 3.1

A SCHEMATIC PRESENTATION OF THE SAMPLE SELECTION



IV. Data Base of the Study:

Relevant and required data for the present study were collected from primary sources by administering an interview schedule to the selected households. The interview schedule was first pre-tested to check for clarity and specificity and the necessary modification was made on the basis of the experience gained during pre-testing. The finalized schedule used in the study is given in Annexure II.

V. Period of Study:

The field investigation and data collection for the study was carried out during the period December 2013 – July 2014.

VI. Techniques of Analysis

Data collected were tabulated and analysed for the purpose of giving precise and concise information. Besides, percentages and graphs, following tools were applied.

(a) Chi – Square Analysis:

Chi – square test is one of the simplest and most widely used non – parametric test in statistics. The quantity χ^2 describes the magnitude of the discrepancy between theory and observation and is symbolized as:

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

Where O refers to observed frequency and E refers to expected frequency. In the present study, Chi – Square test was applied to find whether the MGNREGA beneficiaries residing in the selected two blocks differed with respect to socio – economic characteristics.

(b) Paired 't' Test

A paired 't' test is used to determine whether there is significant difference between the average value of the same measurement made under two different conditions. Both measurements are made on each unit in the sample and the test is based on the paired differences between these two values.

The formula for paired 't' test: $t = \frac{\bar{d}\sqrt{n}}{S}$

Where $\bar{d}$ mean of the differences, S stands error of the differences and n is sample size. Paired 't' test was conducted to verify the differences between in savings and indebtedness before and after joining the MGNREGA scheme.

(c) Gini Co – Efficient

To measure the extent of inequality in the distribution of income, the Gini – Coefficient redefined by Angus Deaton (1997) was used:

$$G = \frac{N+1}{N-1} - \frac{2}{N(N-1)U}\left[\sum_{i=1}^{n} P_i X_i\right]$$

Where U is mean income of the population, P_i is the income rank P of person i with income X, such that the richest people receives a rank of one and the poorest people in the income distribution, which allows the Gini to meet the 'Transfer Principle'.

(d) Quality of Life Index (QLI):

To study the levels of living and inequalities among the tribal households quality of life (QOL) index was constructed. In the construction of the QLI, the study converts the raw data on seventeen major component variables into a scale of 0 to 6, so that data on these variables can be easily compared and subjected to statistical analysis (Table 3.8 at the end of the chapter). The respondents are presented with certain indicators and are measured in terms of their relative position in the composite index. The minimum one can score on a particular indicator is zero and the maximum is 6. The scores were transformed into index by using the following formula:

$$\text{Thus, Individual Index} = \frac{\text{Actual value} - \text{Minimum value}}{\text{Maximum value} - \text{Minimum value}} \times 100$$

Once the indicator indices are formed, the comprehensive Composite Index is then calculated as a simple average of the indicator indices.

$$\text{Composite Index} = \frac{\sum \text{Individual Indicator indices}}{N}$$

Where, composite index is the summation of all the individual indices and N is the total number of individual indicator indices.

(e) Discriminant Analysis:

Discriminant analysis was used to find out what distinguishes households with low QLI (HH_{LQLI}) from high QLI (HH_{HQLI}) based on composite quality of life index.

The linear form of the function is as follows:

$$\mathbf{Z = l_1 X_1 + l_2 X_2 + l_3 X_3 + l_4 X_4 + l_5 X_5 + l_6 X_6 + l_7 X_7 + l_8 X_8 + l_9 X_9 + l_{10} X_{10}}$$

Where,

Z = total discriminant scores for the low QLI (HH_{LQLI}) and high QLI (HH_{HQLI}) households;

X_1 = years of schooling;

X_2 = occupation;

X_3 = annual income;

X_4 = annual per capita income;

X_5 = annual food expenditure;

X_6 = number of rooms per person;

X_7 = annual expenditure on clothing per person;

X_8 = type of housing;

X_9 = living area per person;

X_{10} = assets possessed in value terms and

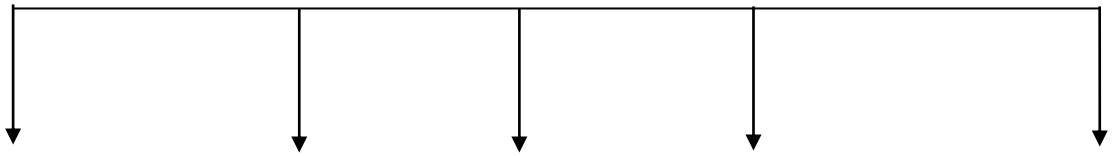
L_j = discriminant weight for independent variable (j = 1, 2, 3, … , 10).

The score, a metric variable, provides a direct means of comparing observations in each function. Observations with similar scores are assumed to be more alike on the variables constituting this function than those with dispersal scores. The potency index of the variable included in the analysis was obtained by multiplying the square of discriminant loadings by the Eigen value of the function.

(f) LIKERT SUMMATED RATING SCALES:

Likert's summated scale technique was applied to find out the respondent's attitude towards positive and negative aspects of MGNREGA. In applying the Likert's

summated scale, a large number of statements concerning the benefits (positive aspects) and problems (negative aspects) of the programme were listed and the respondents opinion for every statement were obtained. In the Likert scale, the respondent is asked to respond to each of the statements in terms of several degrees, usually five degrees of agreement or disagreement.



Highly satisfactory (5) Satisfactory (4) Neutral (3) Not satisfactory (2) Highly not satisfactory (1)

Each point on the scale carries a score. Response indicating the least favourable degree of satisfaction is given the least score (say 1) and the most favourable is given the highest score (say 5). These score values are normally not printed on the instrument but are shown here just to indicate the scoring pattern. The Likert's scaling technique thus assigns a scale value to each of five responses. The same thing was done in respect of each and every statement in the instrument. This way the instrument yields a total score for each respondent, which would then measure the respondent's favourableness toward the given point of view. Likert's summated scale was applied to find the opinion of beneficiaries on various dimensions of the MGNREGA scheme and to find the job satisfaction.

(g) Cronbach's Alpha:

Cronbach's alpha evaluates the unidimensionality of a set of scale items. It is a measure of the extent to which all the variables in a scale are positively related to each other. In fact, it is just an adjustment to the average correlation between every variable and every other.

The formula for alpha is $\alpha_{standardized} = \dfrac{K \cdot \bar{r}}{(1 + (K - 1) \cdot \bar{r})}$

Where K is the number of variables and $\bar{r}$ is the average correlation among all pairs of variables. Cronbach's alpha values ranges from 0 to 1. The higher the score, the more reliable the generated scale is. Nunnally (1978) has indicated 0.7 to be an acceptable

reliability coefficient but lower thresholds are sometimes used in the literature. In the present study, the reliability testing was done to measure unidimensionality of the statements used to measure the respondent's attitude towards the positive and negative aspects of MGNREGA.

(h) Factor Analysis:

Factor analysis is a generic name given to a class of multivariate technique and its primary purpose is to define the underlying structure in a data matrix. Broadly speaking, it addresses the problem of analysing the structure of the interrelationships (correlations) among a large number of variables by defining a set of common underlying dimensions, known as factors. With factor analysis, the researcher can first identify the separate dimensions of the structure and then determine the extent to which each variable is explained by each dimension. Once these dimensions and the explanation of each variable are determined, the two primary uses for factor analysis, namely summarization and data reduction can be achieved. In summarizing the data, factor analysis derives underlying dimensions that, when interpreted and understood, describe the data in a much smaller number of concepts than the original individual variables. In the present study factor analysis has been used to identify the underlining dimensions on the positive and negative aspects of MGNREG scheme.

All calculations were done by using SPSS 16 computer package.

(i) Path Analysis:

Path analysis is a straightforward extension of multiple regressions. Its aim is to provide estimates of the magnitude and significance of hypothesized causal connections between sets of variables. This is best explained by considering a path diagram. Path analysis is used to describe the directed dependencies among a set of variables. In addition to being thought of as a form of multiple regression focusing on causality, path analysis can be viewed as a special case of structural equation modeling (SEM) – one in which only single indicators are employed for each of the variables in the causal model. That is, path analysis is SEM with a structural model, but no measurement model. Other terms used to refer to path analysis include causal modeling, analysis of covariance structures, and latent variable models. Its aim is to provide estimates of the magnitude and significance of hypothesized causal connections between sets of variables, which is best explained by a path diagram.

To construct a path diagram the names of the variables are written, arrow is drawn from one variable to other variable which it affects. One can distinguish between input and output path diagrams. An input path diagram is one that is drawn beforehand to help plan the analysis and represents the casual connections that are predicted by the hypothesis.

An output path diagram represents the results of a statistical analysis, and shows what was actually found. The objective of path analysis is to understand the pattern of correlations among the variables and explain the variations with the model specified. The path of the model is shown by a square and an arrow, which shows the causation. Regression weight is predicted by the model. Path analysis was applied to evaluate the level of satisfaction on aspects of MGNREG scheme. Path model was executed by using VPLS programme.

VII) Limitations of the Study:

The present study relies on the information gathered through surveys, observations and personal interviews, which are subject to bias. Besides, errors arising out of lack of co-operation of the respondents, deliberate under-statements, over-statements or evasion of information, etc., may have affected the results.

In the analysis of consumption expenditure pattern, no provision for differences in age structure of sample households was made. Expenditure patterns have been compared ignoring these household characteristics.

In the construction of quality of life index, only a few selected indicators could be used due to paucity of data and time constraint. A more broad-based indicator could have given a more realistic picture of the levels of living of the tribal households. Further, these findings and conclusions could only be applicable to similar set of socio-economic situations.

But these limitations in no way negate the findings of the study and offer scope for further research in future.

TABLE 3.5
GUIDELINE TABLE FOR COMPUTING THE TRIBAL QUALITY LIFE INDEX

S.No	INDICATORS	SCORES						
		0	**1**	**2**	**3**	**4**	**5**	**6**
1	Education of the head of the household (years)	Illiterate	Primary level	Middle (6 to 8)	Secondary (8 to 10)	Hr.sec (10 to 12)	Degree (13 to 15)	Post graduate
2	Occupational category	Unemployed	Farm work	Nonfarm work	-	-	-	-
3	Annual household income	Below 15000	15000 – 30000	30000 - 45000	45000 – 60000	60000 – 75000	75000 – 90000	Above 90000
4	Annual per capita income	Below 3000	3000 – 5000	5000 – 7000	7000 – 9000	9000 – 11000	11000 – 13000	Above 15000
5	Calorie intake per day per person	Below 1500	1500 – 1800	1800 – 2100	2100 – 2400	2400 - 2700	2700 - 3000	Above 3000
6	Annual food expenditure*as percentage of income (percent)	85 and above	75 – 85	70 – 75	65 – 70	60 – 65	55 - 60	55 and below
7	Annual expenditure on clothing*per person (Rs.)	Below 300	300 – 600	600 – 900	900 – 1200	1200 – 1500	1500 – 1800	Above 1800
8	Ownership pattern of house	Rented house	Own house	-	-	-	-	-
9	Type of housing Roof(R),Wall (W), Floor (F)	Leaf(R), Leaf(W), Mud (F)	Leaf(R), Mud(W), Mud (F)	Tiles(R), Brick(W), Mud (F)	Tiles (R), Brick(W), Cement(F)	Concrete(R), Brick(W), Cement(F)	Tiles pucca	Terrace
10	Living area per person(Sq.meters)	0	2	4	6	8	10	12 and above
11	Rooms per person	0	0.25	0.5	-	1	1.25	1 ½ above
12	Source of drinking water	Public tap	Private tap	Others	-	-	-	-
13	Drainage facility	No facility	Open type	Close type	-	-	-	-
14	Toilet facility	No	Yes		-	-	-	-
15	Fuel availability	Firewood	Kerosene	LPG	Bio gas	-	-	-
16	Asset Possessed in value terms	Below 100000	100000 – 200000	200000 – 300000	300000 – 400000	400000 - 500000	500000 - 600000	Above 600000