Chapter 3

METHODOLOGY
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The present study is an effort to assess the social value and consumer behaviour of women consumers, activists and government officials in respect of food adulteration.

The scientific procedure adopted for the study is as follows:

3.1 Selection of the Area.
3.2 Selection of Samples.
3.3 Development of Research Instruments.
3.4 Administration of the Instruments.
3.5 Analysis of the Data.
3.6 Application of Statistical Tests.

3.1. Selection of the area

The area selected for the study comprised of the entire district of Trivandrum. Being the capital city, it exhibits representativeness with respect to the social and cultural factors common to the different parts of the State. Trivandrum District, with four taluks, consists of a harmonious combination of rural, urban, semi-urban, coastal and hilly areas. (Fig 1)
FIG - 1
MAP OF
TRIVANDRUM DISTRICT.
The important demographic features of the district in comparison with the entire Kerala State is depicted in Table 3.

**TABLE 3**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item</th>
<th>Unit</th>
<th>Kerala</th>
<th>Trivandrum</th>
<th>Ranking of Trivandrum among the Districts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Area</td>
<td>0000 Sq. Km</td>
<td>38.86</td>
<td>2.19</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Population</td>
<td>Lakhs</td>
<td>290.99</td>
<td>29.47</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Ratio to total population</td>
<td>Percentage</td>
<td>-</td>
<td>10.13</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Density of population</td>
<td>Sq.km.</td>
<td>749</td>
<td>1,344</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>No. of Households</td>
<td>Lakhs</td>
<td>55.13</td>
<td>6.19</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Average size of the family</td>
<td>Nos.</td>
<td>5.28</td>
<td>4.76</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>Literacy rate</td>
<td>Percentage</td>
<td>89.81</td>
<td>89.22</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td></td>
<td>93.62</td>
<td>92.84</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>86.17</td>
<td>85.76</td>
<td>9</td>
</tr>
<tr>
<td>8</td>
<td>Fair-price shops</td>
<td>Nos.</td>
<td>13,143</td>
<td>1,511</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Ration cards</td>
<td>000s</td>
<td>5,322</td>
<td>616</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Consumer organisations</td>
<td>Nos.</td>
<td>18</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>


V.K. Agarwal: Consumer Protection (Law and Practices)'
Among the 14 districts in Kerala, Trivandrum has the largest number of households, fair-price shops and ration cards. It is the second most populous district in the State. Trivandrum has the ninth rank in literacy among the districts.

3.2 Selection of Samples

Three types of samples were selected for the present study, viz., (1) women consumers, (2) activists, (3) members of the various consumer organisations and (3) Government officials.

As there is some homogenity in the desires, attitudes, values and tastes in consuming food items in each household, which is the unit of the society, four hundred households were selected as the sample for the study. As household purchases were most often made by the mothers or housewives in the families, they were identified as 'women consumers' for the present study.

Education-oriented and action based consumer protection organisations were found to be the major agencies responsible for enforcing prevention of food adulteration laws in the country. Hence, 50 activists from these organisations were selected for the study.
The Government is the agency directly or indirectly involved in preventing food adulteration and in protecting the consumers from exploitation of the traders. Home scientists, too, have a major role to play in checking consumption of adulterated foods at the households level. Hence, fifty persons responsible for implementation of these laws, and for the formulation of related policies, were also included in the third category of respondents.

Random sampling method was used for selecting the samples. The individuals and organisations were chosen accordingly. (Fig 2)

3.3 Development of Research Instruments

Verbal measure through survey was adopted for the present study. It has a certain face validity. It also provides a simple means of assessing small changes in the subjects' feeling (Carlsmith, et al., 1976).

The research instruments administered in the present study were:

1. Interview schedule to elicit information on the socio-economic and family background, as well as on the consumer behaviour, of the respondents.
Fig. 2. SAMPLE SELECTION
2. Social value scale to ascertain the social value correlation with food adulteration.

The first part of the interview schedule consisted of questions relating to socio-economic and family background. The schedule was prepared with questions pertaining to various independent variables, such as place of residence, religion, type and composition of the family, age, education, occupation, total income, expenditure on food items, decision-making power, and participation in the local consumer organisations. Proper coding was done for easy analysis as depicted in Appendix I.

The second part of the interview schedule contained questions intended to discover the consumer behaviour index of the respondents.

Consumer behaviour is defined as the acts of individuals directly in obtaining and using economic goods and services, including the decision processes that precede and determine these acts (Engel, et al., 1978).

The consumer behaviour index was developed from three dimensions which may have an influence on consumers viz., (1) their purchasing behaviour; (2) awareness about food adulteration, and (3) their reaction towards food adulteration as a social problem.
The purchasing behaviour of a consumer was assessed from the purchasing pattern of most common staple food items and semi-and fully processed food items.

A pilot study was conducted among fifty respondents with a list of staple food items and semi- or fully processed food items available in the Indian market in order to find out the purchasing pattern. This survey revealed that the purchasing pattern of certain food items was the same, as in the selection of shops, frequency of purchase, and reason for purchasing. Thus, similar food items were grouped for convenience, and finally, four groups of staple food items and ten varieties of semi- or fully processed food items were selected to ascertain the purchasing behaviour.

The first group of staple food item included all kinds of cereals and pulses and their various products, which were the major and essential constituents of the daily diet of all families. Common spices and condiments as well as miscellaneous items such as coffee, tea, sugar and salt, were included in the second category. Since oil was most essential for cooking, various varieties of oils were included in the third category of
staple food items; as milk is considered as a complete food, milk and its products were included in the last category.

Extruded products such as noodles, semia, pickles, sauces and chutney, jam and jelly, fruit juices and squash, health drinks, baked and fried items, fast-foods, sugar-based products, cereals or pulses, flour and powered spices, and dried items were the items of semi- and fully processed foods selected for the final study. They were to be the most commonly accepted items among the consumers.

The member of the family involved in affecting the purchase, frequency of purchase, source of buying and reasons for the same, number of processed food items purchased, the frequency of use, the serving pattern pattern and other extraneous factors influencing the purchases, were the various aspects studied to ascertain the purchasing behaviour of the consumers.

Knowledge of awareness of about food adulteration was assessed through enquiries on the purchase problems, knowledge about food adulterants and their effect on health, consumer redress agencies, and food standards.

Enquiries on the role of respondents in preventing food adulteration with reference to detection of adulterants,
experience in registering complaints, and awareness about food standards, labels, weights and measures, and action taken to stop food adulteration and short weighment were also collected. The conceptual framework of the study is given in Fig 3.

In order to determine the consumer behaviour index, scoring was done with the purpose of giving proper weightage to various responses. The weightage for the response were decided after various formal and informal discussions with subject specialists. The details of the score values, along with the interview schedule, are given in Appendix II.

The cumulative score value, obtained by summing up the score values for the various responses, is treated as the consumer behaviour index of each respondent.

To measure the social value scale, Thurstone technique of scaled value was adopted. Standard literature on the subject, published research dissertations, and discussions with experts in the field, were the major sources utilised in developing the initial set of statements to prepare the scale.

Statements with paired alternatives, one favourable for social value and the other for personal value, were listed. When a person's favouritism towards a value is known, it often becomes possible to predict with accuracy how he may behave in a given
Fig. 3. CONCEPTUAL FRAMEWORK
situation (Swanson, 1981). Values differ greatly in the degree of clarity with which they are perceived (Combs and Donald, 1959).

A 'forced choice' method was adopted to construct the scale. The discrimination and preference values of items were determined, and items approximately equal in both were paired to control the item desirability.

The items or statements (30 in number) chosen for pilot study were prepared in affirmative statements avoiding all technical jargons (Appendix III). These statements were edited so that each item yielded a single idea with two alternatives.

These thirty statements were pretested for their appropriateness and feasibility among fifty consumers selected at random.

Those who showed favourableness towards social value given a score value of '2' while score value '1' was given to those responses which favoured personal value. The total scores of the respondents were worked out for all 30 listed items and the respondents were listed in the descending order of total scores.

These score values were utilised for item analysis. Item analysis is a set of procedures applied to know indices of truthfulness of items (Single, 1986). Two tests, namely, item
difficulty and item validity test, were worked out for item analysis.

From the list of respondents the upper 27 per cent and lower 27 per cent were selected. The index of difficulty was determined according to the formula suggested by Singh (1986), viz.,

\[ D = \frac{R}{N} \]

where

\[ D = \text{Index of difficulty}, \]
\[ R = \text{No. of correct answers, and} \]
\[ N = \text{No. of respondents} \]

Since chance success inflates the proportion obtained for desired answers to an item as compared with the proportion of legitimately right answers, correction was required. The formula recommended by Guilford (1954) was used for this purpose. The corrected proportion was computed directly from response count data using the formula:

\[ P_i = \frac{R_i - W_i}{K-1} \cdot \frac{1}{R_i + W_i} , \text{where} \]

\[ R = \text{No: answering item i correctly,} \]
\[ W = \text{No: answering item i incorrectly, and} \]
\[ K = \text{No: of alternatives} \]
Details pertaining to the corrected proportion of all the 30 items listed are given in Appendix IV.

Assuming that the thing measured by the item is normally and continuously distributed in the population, the biserial \( r \) coefficient of correlation was adopted to find the correlation indices of item validity (Flanagan, 1939).

The respondents were restricted to highest 27 per cent and the lowest 27 per cent of the total score distribution. The proportion of respondents passing the item in the upper criterion group \( P_u \) was found on the ordinate, and the corresponding proportion from the lower criterion group, \( P_e \) was found on the abscissa. The co-efficient \( r_b \) was found at the intersection of perpendicular at these values.

The correlation indices of item validity worked out for the thirty items are also given in Appendix IV.

The mean values of the upper and lower proportions were taken and compared with the correlation indices of item validity. Sixteen items, having moderate difficulty and high validity, were selected for the final scale, they are incorporated in Appendix IV.
Calculation of Scale Values

Weightages for two scale values viz., social value and personal value, were the mean score obtained from the views of seven experts in the field of Sociology, Psychology and Home Science, by valuing the two scales separately in seven-point continuum (Appendix V).

Cumulative scores of the answers pertaining to social value or personal value were taken as the total score for social value or personal value of the particular respondent. The details are presented in Appendix VI.

Reliability and validity of the instruments developed

Reliability is the consistency with which something is measured maximally by the test or other measuring device (Ghosh, 1982).

The test-re-test reliability refers to the consistency of scores obtained by the same individuals when re-examined with the same test in different occasions (Koul, 1992).

Developed tests were administered twice to a group of fifty randomly selected consumers with a time-gap of 15-21 days.
The correlation co-efficient of the two independent sets of scores, obtained from two administrations were worked out using Pearson Product Moment Correlation Co-efficient formula.

The test-re-test reliability co-efficient of correlation was found to be +0.50. It showed that the test was reliable to a satisfactory level.

The main criterion for testing content validity is how well the contents of the scale represent the subject-matter under study. The present scale had this validity since all the possible items in the universe of content had been included.

The validity of the social value scale is determined by correlating the average scores obtained by the mean of the scale value of the endorsed statements with some external criterion, which might be the performance of the respondent in some related field (Best, 1970).

For the purpose of the study, an attitude scale developed in Kerala Agricultural University (Prema, 1988) was used as the external criterion. The scale consisted of eighteen statements with three-point continuum, such as favourable, unfavourable, and undecided. The details of the scale are presented in Appendix VII.
The administration of Pearson's correlation co-efficient to the developed test and the external test revealed a satisfactory validity co-efficient level +0.40.

3.4 Administration of the Instrument Developed

The final research instruments, namely, interview schedule and social value scale, were duplicated and administered to all the respondents i.e., women consumers, activists and government officials directly through interview method. The survey was done during the year 1992-1993. Each interview lasted for 30 to 40 minutes along with informal discussion.

3.5 Analysis of data

The data collected through research instruments developed were coded, classified and tabulated to facilitate analysis.

Percentage analysis was employed to present the results related to the study. The distribution pattern of the respondents was grouped into two columns, viz., those who maintained high consumer index, and those who maintained low consumer behaviour index. The same method was adopted to find out the distribution pattern of respondents in their social values.
3.6 Statistical tests applied

The following statistical methods (Snedecor and Cochran, 1967) were used to analyse the data collected from respondents.

1. Pearson Product Moment Correlation.
2. Chi-square.
3. Paired t-test.
4. Anova.