Chapter -III

Research Methodology
Chapter-3

Research Methodology

In this chapter, the need of study, objectives, scope of the study hypothesis, sampling, sources and instruments of data collection and limitations of the study have been presented systematically.

3.1. Need of Study

Himachal Pradesh, being a hilly and difficult State of India, is largely scattered. The facilities of transportation are inadequate. The people have to go to a long distance for the purchase of essential commodities. Many agencies are undertaking the job of PDS in this regard. These agencies are performing the job of the distribution of essential commodities on reasonable prices at the door steps of the people. Even then, there are certain defects in the system which are hampering the progress and performance of PDS. The existing literature indicates that bulk of the studies have been undertaken on the role, problem and prospects of PDS. Secondly, majority of the studies are based on secondary data. No serious attempt has been made to evaluate the performance of PDS in the State. Moreover, there are certain other basic questions which have remained unanswered in such studies. Some of them are: Is the PDS playing positive role? What is its contribution in
transforming the lot of rural people? What is the success/failure rate of Fair Price Shops? What are the crucial problems creating the hindrances in the smooth functioning of PDS? What are the expectations and requirements of the people? What should be the role of PDS agencies/government in the perception of the general masses? In view of these heither to unattempted questions, there is an urgent need of the study which can examine the performance, evaluate the impact and identify the shortcomings of PDS system in the state and could suggest effective remedial measures for onground application and implementation.

3.2. **Objective of the Study**

The present study has been attempted in view of the gaps identified in the literature. The main objectives of the study are:

1. To study the existing network of PDS in the State.
2. To examine the performance of Public Distribution System in the state.
3. To investigate into the adequacy and quality of goods supplied to the people.
4. To examine the attitude of the people towards the role accomplishment of PDS agencies.
5. To study the attitude of consumers with regard to the management of PDS.

6. To identify the problems faced by the PDS agencies in the distribution of goods and to advance suggestions for the overall improvement in the system.

3.3. **Hypothesis:**

Hypothesis is an important part of research. It is a primary idea which provides guidelines to conduct a study. According to Goods and Hatt, "Hypothesis is a proposition which can be put to test to determine its validity." On the basis of these research questions, the following main hypotheses are expected to be verified during the course of the analysis.

1. PDS is unsuccessful in achieving its goals.

2. Management has failed to provide the adequate drive for further development of PDS.

3. The employees of FPS have low level of satisfaction with the functioning of PDS.

4. Consumers have low level of perception with regard to PDS management.
5. Consumers have low level of satisfaction with regard to Ward Committees and Consumer Councils.

3.4 **Sampling**

The sample for the present study includes the Fair Price Shops dealing with PDS items and the people connected with these Fair Price Shops in two districts of Himachal Pradesh. The process of selecting the sample is of a multi-stage nature. At the first stage, representative Fair Price Shops have been selected. In all, 20 fair price shops are selected from rural and the urban areas (i.e. 15 Fair Price Shops from rural 5 Fair Price Shops from urban areas) from the two districts. While selecting the sample special care has been taken to ensure that all kinds of Fair Price Shops run by different agencies and other regional variation are duly represented.

At the second stages 10 consumers from each Fair Price Shops have been selected. Women are given due weightage since they make 47 percent of the total population in the area. Through the techniques of purposive sampling, care is taken that families belonging to different castes, sizes of income, education levels, sizes of land holdings, etc. are included.
Sample Description:

1. Population  
   Every respondents who is the consumer and getting services from Fair Price Shops.

2. Sampling Frame  
   List of consumers with FPSs

   200 Employees.

4. Sampling Method  
   a) Simple random sampling for selecting 2 districts out of 12 districts.
      
   b) Proportional sampling for selecting Fair Price Shops In all 20 Fair Price Shop were selected from 2 districts.
      
   c) Quota sampling 10 consumers were, selected from each Fair Price Shops.

3.5 Research Design:-

For accomplishing the objectives of the study, both secondary and primary data have been utilized.

3.5.1 Secondary Data:-

Certain data collected by different agencies for other than the present purposes have also been used. These types of data were collected from.
3.5.2. **Primary Data:-**

The analysis of the present study was largely based on primary data which was collected through the following instruments:

(a) **Questionnaire:**

The data was collected by administering a structural schedule of questions to the employees and the respondents of the rural and urban Fair Price
Shops. During the preparation of questionnaire the following factors have been considered i.e. simple, maximum coverage, time factor, adequate informations etc. The questionnaire for the employees and the respondents of the Fair Price Shops aimed at collecting data relating to PDS items in FPSs and personal profiles such as age, sex, status, educational qualifications etc. Certain informations were gathered through informal interview with different authorities of Civil Supply Cooperative Department and Food and Supplies Department.

(b) **Observation:**

In the present study, the observation method has been employed by the researcher to investigate the performance, problems and bottlenecks which marred the functioning of Fair Price Shops. Certain informations were collected through personal observation. Additional data were gathered with in depth interview with top executives and other Government official involved directly or indirectly with PDS.

3.6. **Instruments of Data Collection:-**

For collecting data from fair price shops, structural schedule of questions were prepared and personally administered by the researcher.
3.6.1. **Schedule for Fair Price Shops:**

A structured schedule of questions was developed and pretested. It consisted of 1 different types of questions. The following are the major sections of the schedule:

1. Background and general information.
2. Major rationed items and non-rationed items.
3. Value of physical stock.
4. Amount of monthly quota.
5. Satisfaction with the salary or commission.
6. Employees’ perception towards Management attitude regarding PDS.
7. Number of ration card holders.
8. Number of employees.
10. Approximate amount of investment on non-rationed items.
11. Estimated monthly income from non-rationed items, if any.
13. Training of salesman or secretary.
3.6.2. Schedule administered to Consumers

The following are the major sections of the schedule:

1. Background and general information.
2. Essential commodities from FPSc.
3. Availability of ration goods.
4. Time consumed.
5. Satisfaction with the time consumed.
6. Satisfaction with the distance to fair price shops.
7. Satisfaction with the ration card distribution method.
8. Sufficiency with the quality.
10. Satisfaction with the weighing procedure.
11. Membership with cooperative of cooperative society.
12. Awareness with National Production-cum-Distribution Scheme.
13. Occupation.
15. Income.
17. Satisfaction with the location of Fair Price Shops.
18. Satisfaction with the working hours of Fair Price Shops.
19. Basis for issuing the ration.
21. Satisfaction with the prices charged by Fair Price Shops.
22. Difference between prices at Fair Price Shops and the open market prices.
23. Awareness of the objectives of Consumer Cooperative Societies.
25. Participation in Annual General Body Meeting of Consumer Cooperative Societies.
26. Participation in the elections of Consumer Cooperative Societies.

3.7. **Tools of Analysis**

The data collected from the different sources has been classified and arranged in tables according to the requirements of analysis. For the analysis of results, the following statistical techniques have been applied.

A. Chi-Square test.

B. Tabular Analysis
   
   i. Simple Statistical Techniques.
   
   ii. Average Growth Rate.
   
   iii. Compound Growth Rate.

C. Trend Analysis.

D. Staple Scale.
A Chi-Square Test:-

Test is a non-parametric test. Non-Parametric data does not follow the normal curve of the probability and have unequal or unmeasurable scale intervals between categories. Chi-Square test is a test which describes the magnitude of difference between observed frequencies and the frequencies expected under certain assumptions. With the help of Chi-Square test, it is possible to find out whether such differences are significant or are insignificant and could have arisen due to fluctuations of sampling. The information gathered through questionnaires from the different categories of employees and respondents is in the form of nominal data. Hence Chi-Square test is considered more appropriate in the present study. In the chi-square test, the only problem is to decide how the expected frequencies have to be arrived at. There is no hard and fast rule of it and the method of arriving at the expected frequencies would depend upon the nature of the problem. Once the expected value has been arrived at, the calculation of chi-square and its interpretation are very easy and involve the following steps:

a) Calculation of the expected frequencies, denote them by $E$.

b) Find out difference between observed frequencies denoted by $O$ and expected frequencies. In other words find $(O-E)$
c) Square up the various values of (O-E) or find out \((O-E)^2\) and divided each values of \((O-E)^2\) by the respective value of E or the expected frequency.

d) The value of \((O-E)^2\) and this will be the value of \(X^2\). In other words \\
\[\text{= \((O- E)^2 / E\).}\]

e) Compare the calculated value of Chi-square with the independent value of 
chi-square (available in tables) for the desired level of significance.

f) If the calculated value of Chi-Square is more than the relevant table value the 
difference between observed and expected values is significant. If the 
calculated value of Chi-Square is less than the table value the difference 
between observed and expected frequencies is not significant and could have 
arisen due to fluctuations of sampling.

B. Tabular Analysis:

In tabular analysis, percentages are calculated to draw the inferences, 
it is very scientific and perfect analysis. In the present study, it is used to support 
the inferences drawn from the above statistical analysis as non-parametric analysis is 
not that powerful as parametric test.

i) Simple Statistical Techniques:
For analysis of the data collected, simple statistical techniques such as diagrams, graphical presentation, percentages and averages have been used.

ii) Average Growth Rate:

The geometric mean is used to find the average growth rate. Geometric Mean is defined as the nth root of the product of n items or values. While calculating average growth rate, following equation has been used.

\[ GM = \sqrt[n]{(X_1) \times (X_2) \times (X_3) \ldots (X_n)} \]

Where \( X_1, X_2, X_3, \ldots \) refers to the various items of the series.

iii) Compound Growth Rate:

While calculating compound growth rate, the following equation has been used:

\[ A_n = A_o (1+r)^n \]

Where \( A_n \) = is the figure of nth year
\( A_o \) = is the figure of the base year.
\( n \) = is the number of years and
\( r \) = is the rate of growth
C. Trend Analysis:

The method of least square, when used to fit trend lines to time series data, is employed mainly because it is simple, practical method which provides best fit according to reasonable criterion. The least squares’ method is the sum of deviations of the actual values of Y and the trend values of Y is equal to zero \( \sum (Y - Y_e) = 0 \), and the sum of squares of the deviations of the actual and trend values is the least, \( \sum (Y - Y_e)^2 \) = minimum. This is also called the line of ‘best fit’.

Time series data are generally interdependent, on the basis of their interdependence, a trend is computed. The straight line trend is represented by the equation:

\[ Y = a + bX. \]

Where Y = required trend value

X = unit of time a, b are constants.

The constant a is the Y -intercept. This is the difference between the point of the origin (O) and the point when the trend line and Y -axis intersect. This shows the value of Y when X=0 . The constant b indicates the slop, which is the
change is $Y$ for each unit change in $X$. The following figure shows the basis of the line of the best fit.

In the trend equation $Y = a + bX$, the values of constant $a$ and $b$ are determined by two normal equations. The two equations are:

$$\sum Y = Na + b\sum X$$
$$\sum Y = a\sum X + b\sum X^2$$

The following steps are involved in finding the trend values by this method:

i) The points of time ($X$) are denoted by natural number like 1, 2, 3 -.

The summation of $Xs$, ($\sum X$) is obtained.

ii) The natural numbers assigned to $Xs$, are squared up and their total ($\sum X^2$) is obtained.

iii) The $Xs$ are multiplied with the respective values of $Y$ and the total of the product ($\sum XY$) is found out.

iv) Values of $Y$ are added up to get $\sum Y$.

v) These values are placed in the two normal equations and by solving them by the process of simultaneous equations, the values of $a$ and $b$ are found out.

vi) Values so obtained for $a$ and $b$ are placed in the trend equations and then trend values of $Ys$ are found out for various values of $Xs$. 

D. **Staple Scale.**

In order to evaluate the employees perception towards the attitude of management with regard to the functioning of PDS, staple scale method has been applied.

3.8. **Scope of Present Study.**

The scope of present study includes the study of Fair Price Shops of Mandi and Bilaspur District of Himachal Pradesh. The efficiency and effectiveness of the PDS in the Mandi and Bilaspur District, the different aspects such as management of PDS, its network, performance, evaluation, and perception of consumers towards the management of PDS, role of the cooperatives in boosting the rural sections of the society and network of Civil Supplies Corporation in PDS items have been studied.

3.9 **Limitations of the study:**

Although the universe of the present study is unlimited, our study is confined to a limited scope with the fact that the inferences can be generalized from
the findings of the intensive study of this nature which is based on inductive reasoning.

1. **PDS is a wide field of the study and large number of factors contribute towards the improvement of PDS. It is difficult to study all indicators contributing to PDS.**

2. **Human beings were hesitant and reluctant to dispose functioning and weak points of their organisation in the course of opinion survey conducted by researcher thorough questionnaire and interview.**

3. **The scope of study was kept limited due to scarcity of finance and resources.**

4. **Incomplete and wrong information & response to some questions could not be avoided. In certain cases, the respondents were found reluctant to the assurance was given to maintain confidentiality of data, yet the desired success could not be achieved.**

5. **The study is not free from built in biases.**