CHAPTER -2

RESEARCH METHODOLOGY, DESIGN AND TOOLS

In this chapter we deal with the key concepts and principles of Research Design, Methodology and the application of these principles in the present Research. Various concepts are explained and analyzed so as to get clear idea of the principles and hence understand the pattern adopted in the research activity.

2.1. Social Facts

In the earlier days, importance of scientific methods for research was not highlighted. But today, Research Design and the Methodology followed is an important aspect in any scientific study. Importance is to be placed to observe social facts in our studies. We cannot be satisfied with vague generalities on the nature of societies on the relations between the social and the biological realms. Emile Durkheim observes: "The Sociologists have been content, therefore, to compare the merits of deduction and induction and make a superficial inquiry in to the most general means and methods at the command of sociological investigators. But the precautions to be taken in the observation of facts, the manner in which the principal problems should be formulated, the direction research should take the specific methods of work which may enable it to reach its conclusions - all these remained completely undermined. "1.

Based on the rules of Sociological Method, we have to identify the social facts and record them for our understanding and analyze them for the correct perception of the sociological realities. All the activities or actions of human life are not sociologically relevant. Emile Durkheim defines social facts as: " A social fact is every way of acting, fixed or not, capable of exercising on the individual an external constraint; or again, every way of acting which is general throughout a given society, while at the same
time existing in its own right independent of its individual manifestations.

William J. Goode and Paul K. Hatt, in their book, Methods of Social Research, say: "Anyone who has a serious interest in understanding society must give some thought to the ways in which social facts can be and are gathered. Thus we find a range of needs which the study of research techniques may help to satisfy. "

In the scientific approach in the study of Sociology, we have to understand the mutual relationship of theory and social fact. Fact and theory stimulate each other. "Facts take their ultimate meaning from the theories which summarize them, classify them, predict them, point them out, and define them. Theory may direct the scientific process, facts in turn plays significant role in the development of the theory."4

2.2. Concept and Phenomenon.

In the study we have to understand and differentiate between Concept and Phenomenon. Concepts are logical constructs created from sense impressions, precepts, or even fairly complex experiences. The concept is not the phenomenon itself; that is, such logical constructs do not exist outside the stated frame of reference. The distinction between fact and concept is that concept symbolizes the empirical relationships and phenomena, which are stated by the fact. A fact is a logical construct of concept. A concept is abstracted from many sense impressions or precepts. The process of conceptualization is one of abstracting and generalizing sense impressions. Conceptualization is essential to thought and foundation of all human communications. Phenomenon is a fact or event in nature or society especially one that is not fully understood.

Therefore, concepts and phenomenon are identified in this research study. The attempt is to fully uncover the phenomenon to understand the concepts and facts so that these can be interpreted in the analysis.
2.3. Hypothesis
A hypothesis is an idea or explanation, of something that is based on few known facts but that has not been proved to be true or correct. A hypothesis states what we are looking for. When facts are assembled, ordered and seen in a relationship, they constitute a theory. The theory is not speculation, but is built upon fact the formulation of the deduction however constitutes a hypothesis; if verified, it becomes part of a future theoretical construction. William H. George says: "In practice, a theory is the elaborate hypothesis which deals with more types of facts than does the simple hypothesis ... the distinction is not clearly defined". 5.

2.4. Research
Research refers to a careful study of a subject, especially in order to discover new facts or information about any branch of knowledge. It is a scientific and systematic search for pertinent information on a specific topic. L.V. Redman and A.V.H. Mory define research as a "systematized effort to gain new knowledge."6.

Research consists of defining and redefining problems, formulating hypothesis or suggested solutions, collecting, organizing, and evaluating data, making deductions and reaching conclusions and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis. Thus "research refers to the systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions towards the concerned problem or in certain generalizations for some theoretical formulations."7.

According to Bernard Ostle and Richard W. Mensing, "Research is an enquiry in to the nature of, the reasons for, and the consequences of any particular set of circumstances, whether these circumstances are experimentally controlled or recorded just as they occur. Further, research
implies the researcher is interested in more than particular results: he is interested in the repeatability of the results and in their extension to more complicated and general situations". 8

2.4.1. Exploratory or Formulative research: The studies with the objectives of gaining familiarity with a phenomenon or to achieve new insights into it are termed as exploratory or formulative research studies.

2.4.2. Descriptive research: Studies with the objective of portraying accurately the characteristics of a particular individual, situation or group are known as descriptive research studies.

2.4.3. Diagnostic research: Studies with the objectives to determine the frequency with which something occurs or with which it is associated with something else are known as diagnostic research studies.

2.4.4. Hypothesis-testing research: Studies to test a hypothesis of a causal relationship between variables are known as hypothesis-testing research studies.

The significance of research is that it inculcates scientific and inductive thinking and promotes the habits of thinking and organizing. Research helps to make policy – decisions and can solve various problems in operational and planning activities in business and industry. Research is equally important for social scientists in studying social relationships and in seeking answers to various social problems. Research in social sciences deals with knowledge for its own sake and for what it can contribute to practical concerns.

Marie Jahoda observes: "The double emphasis is perhaps especially appropriate in the case of social sciences. On the one hand, its responsibility as a science is to develop a body of principles that make
possible the understanding and prediction of the whole range of human interactions. On the other hand because of its social orientation, it is increasingly being looked to for practical guidance in solving immediate problems of human relations. “9

The Research Process includes the following order concerning various steps giving us useful procedural guidelines:

- Formulating the Research Problem
- Extensive Literature Survey
- Develop Hypotheses
- Prepare the Research Design
- Determining the Sample Design
- Collecting the Data
- Executions of the Project Objectives
- Analyses of Data
- Hypothesis Testing
- Interpretations
- Preparation of the Thesis
- Presentation of Thesis

2.5. Research Methodology.
There is a difference between Research Methods, Research methodology and Research Techniques. Research methods are all those methods used for conducting the research and in performing the research operations. Research techniques refers to the behavior and instruments used in performing research operations such as making observations, recording the data, processing the data, etc. Research methodology refers to the behavior and instruments used in selecting and constructing research technique. However, in practice, the two terms are taken as interchangeable and when we talk of research methods we include research techniques within their compass.
According to C R Kothari, "Research Methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. The scope of research methodology is wider than that of research methods. Thus, when we talk of research methodology, we not only talk of the research methods, but also consider the logic behind the methods we use in the context of our research study and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others". 10. Research and Scientific Method are closely connected. The philosophy common to all research methods and techniques is usually given the name scientific method.

Karl Pearson writes: "The scientific method is one and the same in the branches of science and that method is the method of all logically trained minds.... The unity of all sciences consists alone in its methods, not its material; the man who classifies facts of any kind whatever, who sees their mutual relation and describes their sequences, is applying the Scientific Method and is a man of science". 11.

2.6. Research Design
The design of a sociological research project can be said to be the plan of action, the strategy and the structure of the overall procedure by which we intend to gain more knowledge of a specific problem or a specific aspect of the society. According to Claire Selltiz and Marie Jahoda, "a research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure". 12

F.N. Kerlinger defines Research Design as "the plan, structure and strategy
of investigation conceived so as to obtain answers to research questions and to control variance”. 13. A research design is the logical and systematic planning and directing of a piece of research. The design results from translating a general scientific model into varied research procedures.

According to Paul Oliver, "Research Design is often used to refer to the pragmatic aspects of the way the research was conducted." 14. Pauline V. Young defines: "Social Research seeks to find out explanations to unexplained social phenomena, to clarify the doubtful, and correct the misconceived facts of social life.” 15.

2.7. Exploratory or Formulative Research Design

In order to achieve the specific objectives of the research programme, we will use both Exploratory and Descriptive Research Design. This research design is applied when the researcher is not familiar with the problem or the community he wants to study. Therefore it aims to get familiarity with the new phenomena or community, to get new insights into the problem or formulate more precise research problem or hypothesis and to locate the possible variables.

Exploratory studies also help in clarification of concepts, in locating important variables, in establishing priorities for further research, in gathering information about practical possibilities for carrying out research in real life setting and in providing a census of problems regarded as urgent by people working in a given field of social relations. In the words of C. R. Kothari, “the main purpose of the exploratory research studies is that of formulating a problem for more precise investigation or of developing the working hypothesis from an operational point of view. The major emphasis in such studies is on the discovery of ideas and insights.” 16.

There are three methods in the context of research design for such studies
viz survey of concerning literature, the survey in the field and the analysis of 'insight-stimulating' examples. It is essential that such studies will remain flexible so that many different aspects of a problem are considered as and when they arise and come to the notice of the researcher.

2.8. Descriptive and Diagnostic Research Design

The purpose of this Research Design is to provide description of an individual, a community, a society, an event or any other unit under investigation. The description provided by it is aimed to involve minimum bias and maximum reliability. Descriptive Design tests specific, but non-causal hypothesis. Random sampling will be used for these descriptions.

According to CR Kothari, "Descriptive research studies are which are concerned with describing the characteristics of a particular individual, or of a group, whereas diagnostic research studies determine the frequency with which something occurs or its association with something else. .. From the point of view of the research design, the descriptive as well as the diagnostic studies share the common requirements and as such we may group together these two types of research studies." 17.

The necessary steps followed in this research design are the following:

- Formulating the objective of the study
- Designing the methods of data collection
- Selecting the sample
- Collecting the data
- Processing and analyzing the data
- Reporting the findings.
2.9. Universe and Sample

The term - Universe is used in the statistical sense to denote the aggregate of units to which the survey results are to apply and need not mean the population of human being in the usual sense of the term. Another common word used is population. According to CA Moser and G. Kalton "it is useful to distinguish between the population for which the results are required, the target and the population actually covered, the survey population. Ideally the two will be the same but for practical reasons there will usually be some differences between them. "18. All the items under consideration in any field of enquiry constitute a universe or population. When there is the complete enumeration of all the items in the population it is known as census enquiry. But very often we are not able to study the entire universe due to vastness of the issue, resources of time, money and energy needed to do and the impracticality of the activity. Hence we have to select a few items, which can represent the total population for the study purposes. The items so selected constitute what is technically called a sample. According to CA Moser and G. Kalton "They do with extreme confidence, because they have good reason to believe that the material they are sampling is so homogeneous or well-mixed that the sample will adequately represent the whole". 19. Gordon Marshall defines "Sampling is a method for collecting information and drawing inferences about a larger population or universe from the analysis of, or only part there of the sample." 20

There are different types of sampling. The important sample designs are: Deliberated sampling, simple random sampling, systematic sampling, stratified sampling, cluster sampling, multi-stage sampling, sequential sampling etc. The researcher has to decide to select the appropriate sample design considering the nature of enquiry and other related factors.

Systematic sampling has been followed in this study to select 200 respondents for the research.
2.10. **Data Collection**

Data means the facts or information when examined and used to find out things or to make decisions. There are various methods for collecting the needed information. "Methods of collecting the information are not so developed and systematized. There is wealth of experiences and a formidable literature describing them, but few would clarify that this amounts to a coherent set of principles or a theoretical framework." 21.

There are two types of data - Primary and Secondary. "Primary data are those which are collected afresh and for the first time, and that happens to be original in character. In secondary data on the other hand are those which have already been collected by someone else and which have already been passed through the statistical process." 22

The major means of collecting the data are: Documentary Sources, Observation, Questionnaire and Interviewing. A wealth of information about the universe is available in historical documents, statistical reports, records of institutions and other sources. Collection of data through these documentary sources is known as secondary data. Observation method is the most commonly used method in studies related to behavioral sciences. According to C.R.Kothari "Observation becomes a scientific tool and the method of data collection for the researcher, when it serves a formulated research purpose, is systematically planned and recorded and is subjected to checks and controls on validity and reliability. Under this method, the information is sought by the investigator's own direct observation without asking from the respondent." 23.

The Questionnaire method is very common especially in the study of big or large areas of study and the universe is very vast. A set off questions are prepared and sent usually by post to the persons concerned with a request to send them back after filling up the answers to the questions. The questionnaire consists of a number of questions printed or typed in
definite order or form. This method is comparatively cost effective, free from the bias of the interviewer, where large samples can be used and the respondents will get sufficient time to answer the questions. The most important and useful method of collecting the data in social surveys is the Interview Method. In this method, the interviewer is seeking information from the person where the person is representative and is likely to be one of many from whom similar information is sought. The interviewer is at liberty to vary the sequence of questions, to explain their meaning, to add additional ones and even to change the wording. In formal interviewing set questions are asked and the answers are recorded in a standardized form. The interview is conversation between interviewer and respondent with the purpose of eliciting certain information from the respondent. Three basic conditions for a successful interview are accessibility of the required information by the respondent, the cognition or understanding by the respondent of what is required of him, and the motivation on the part of the respondent to answer the questions accurately which includes his decision to answer the questions honestly and accurately.

As per CA Moser and G. Kalton "The attitudes of the interviewer like the desire to get on with other activities, embarrassment at ignorance, dislike of the interview content, fear of the consequences and suspicions about the interviewer etc and also the attitudes of the respondent like curiosity, loneliness, politeness, a feeling of duty, a keenness to help the sponsor of the enquiry and a liking for the interviewer etc. are to be matters to be settled so as to get a true picture and correct result of the study." 24.

The method of collecting the information through the personal interviews is usually carried out in a structured way. Structured Interviews involve the use of predetermined questionnaire and highly standardized techniques of recording. Unstructured Interview on the other hand is characterized by flexibility of approach to interviewing and questioning. According to C.A.Moser and G. Kalton "In descriptive studies, we quite
often use the structured interview because it can provide a safe basis for generalizations and it requires less skill on the part of the interviewer." 25.

2.11. Data Analysis

In accordance with the Research Plan the data collected shall be processed and analyzed. Processing implies editing, coding, classifying and tabulating the data so that they are ready for analysis. Analysis means computation of certain measures along with searching for the patterns of relationship that exist among data-groups.

As per C.A. Moser and G. Kalton "Editing is intended to detect and as far as possible eliminate errors in the completed questionnaires. It is certainly one of the least exciting parts of the survey: the work tends to be slow, repetitive and dull and gives cause for none of the enthusiasm associated with the initial planning, while also lacking the interest involved in collecting the data and the ingenuity required to analyze them." 26.

The purpose of coding is to classify the answers to a question into meaningful categories so as to bring out their essential pattern. The data edited and coded are put together in some kinds of tables and may also undergo some other forms of statistical analysis. It is counting of the number of cases falling in to each of several classes. It is just adding the schedules together to count how many of them have answer (X) for the question A and how many answers (Y).

Analysis is categorized in to descriptive analysis and inferential analysis. Inferential analysis is also known as statistical analysis. Descriptive Analysis is largely the study of distributions of one variable. It provides us with profiles of companies, work groups, persons and other subjects on any of a multiple of characteristics such as size, composition,
efficiency, preferences etc. We can also do correlation analysis and causal analysis. Correlation analysis studies the joint variation of two or more variables for determining the amount of correlation between two or more variables.

Causal analysis is concerned with the study of how one or more variables affect changes in another variable. It is the study of functional relationships existing between two or more variables. According to C.R.Kothari "Inferential analysis is concerned with the various tests of significance for testing hypothesis in order to determine with what validity data can be said to indicate some conclusions. It is also concerned with the estimation of population values. It is mainly on the basis of inferential analysis that the task of interpretation (i.e., the task of drawing inferences and conclusions) is performed." 27.

Statistics also play an important role in the analysis of the data and research design. Statistics is a tool in designing research, analyzing its data, and drawing conclusions there from. The large volume of raw data must be suitably reduced so that the same can be read easily and can be used for further analysis. The important statistical measures used are: Measures of Central Tendency or Statistical Averages, Measures of Dispersion, Measures of Asymmetry, Measures of Relationship, and other measures like Index Numbers, Time Series Analysis etc.

2.12. Interpretation of Data
Interpretation refers to the task of drawing inferences from the collected facts after an analytical or experimental study. In fact it is search for broader meaning of research findings. C. William Emory says: "In one sense, interpretation is concerned with relationships within the collected data, partially overlapping analysis. Interpretation also extends beyond the data of study to include the results of other research, theory and hypothesis." 28.
The usefulness and utility of the research findings rest in the proper interpretation of the data and is one of the basic components of research process. Through interpretation the researcher can well understand the abstract principles underlying the findings. It is a device to explain the findings and provide a theoretical conception, which can serve as a guide for further researches.

2.13. Role of Computer in Research

Due to the Information Technology leap in our times, electronic computers have got a very significant role in the research activities. It has become an indispensable part of research students in physical and behavioral sciences as well as in the humanities. The Computer is a device that computes and enables one to carry out mathematical manipulations. The machine is capable of receiving, storing, manipulating, and yielding information such as numbers, words and pictures. Computer has got the characteristics of speed, diligence, storage, accuracy, automation, and binary digits. It has got the advantage of storing huge data, faster retrieval when needed, and processing the data with the aid of various techniques. It has expedited the research work and reduced human drudgery and added to the quality of research activity.

According to C.R. Kothari "Researchers using computers can carry on their task at faster speed and with greater reliability. The developments now taking place in computer technology will further enhance and facilitate the use of computers for researchers. Programming knowledge would no longer remain an obstacle in the use of a computer." 29.

2.1.4 Application of the Principles of Research Design and Methodology

Using the above-mentioned principles of Research Methodologies and Research Design, a Plan of Research was prepared. The Universe of study has been the members of 20 Self Help Groups of 20 villages in
Kalyanpur Block in Kanpur District of Uttar Pradesh where Mariampur Hospital, one credible and committed Voluntary organization is running a community health and development programme to organize the poor and the marginalized for the integrated community development. The Organization started its contact in these selected villages in 2005 and has been successful in mobilizing the community and organizing them in to Self Help Groups and Women's Associations to achieve their rights and improve the quality of life.

Questionnaire and Schedule of Interview were prepared focusing on the members of these Groups. Random sampling method was used to identify 10 respondents each from these 20 Groups. Personal interviews were conducted in each of these villages and respondents were interviewed individually. Questionnaire consisted of information on the personal information like name, age, gender, educational background, marital status etc, economic status, entitlements, social life, associational life, aspects of mobility, participation in the social life, participation in decision making processes, assessment of social involvement, mutual trust and support etc. The copy of the questionnaire is attached as an Annexure.

Based on the Questionnaire, structured interviews were held in the villages of the selected Groups. Prior information was given to the members of the Groups so that they were available in the villages. Interviews were conducted during the daytime in the house of the individual respondents. Questions were asked to each individual respondent and the answers were noted on the questionnaire then and there. Thus the data have been collected from the study group. The respondents were the members of the SHGs, who are the selected women and men of the 20 SHGs in 20 villages who are members of the SHGs. The collection of data also has been made from secondary sources viz. the Gram Sabha list of residents of the village, people below
the poverty line, people belonging to Dalit Communities, male-female ratio etc. Observation Method also was extensively used to see the behavior of respondents, the reactions or responses of the village communities and other agencies and also the changes in the villages.

To edit, summarize and tabulate the data, SPSS Computer package was used and the accuracy of the data was ensured. Tables were prepared accordingly. The data have been interpreted and the learning consolidated to arrive at conclusions and results to understand the new paradigms for the development of rural community through Community mobilization and Rights based approaches to development leading to social inclusion of the excluded communities. Thus the final report has been prepared in the form of a Thesis.

**REFERRENCE**


21. C.R. Kothari, *Research Methodology- Methods and*


