Chapter - 2

Research Methodology
CHAPTER 2
RESEARCH METHODOLOGY

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0 Introduction

Curiosity or inquisitiveness is a distinctive feature of human beings. We are curious to know about ourselves, our institutions, our environment, our planet, other planets, etc. Questions go on arising in our mind. What are the parameters of sound health of a person? How do problems of health arise? What are the remedies? What is the shape of the earth? How do solar and lunar eclipses arise? How is rain formed? Why are places like Ootacamund, Simla cooler than their nearby places? Is there any life in other planets? What are stars? Why day and night alternate? Why the mode of life and activities of human beings vary from place to place? Why there is no communal harmony in certain places? Why there is abject poverty in some countries like India and African countries than in others? And so on. Whenever questions arise we seek answers to them. Whenever we encounter problems, we try to find resource and solutions to them. Such seeking answers and solutions is as old as human civilisation. A systematic search for an answer to question or a solution to a problem is called research.

1 Library and Information Science and Research

A library is the treasury of books and documents which contain and carry knowledge. A library is an essential part of academic life. A researcher's first step is to go to the library to read books and other materials pertaining to his/her own field of interest to formulate a research problem. P.V. Young writes “As a preliminary to field research, or in connection with it, a sustained and high-quality search for data in the library is a most pressing need in the social sciences." There are, therefore, implications about the increasing research activities for libraries. The research workers visit libraries for their information needs. It is the duty of the librarian to give them the required information as quickly and exhaustively as possible. Therefore, it is necessary for librarians to know in

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detail, their information requirements and hence to know reasons for conducting research, how they arrive at generalizations and generate new knowledge. Herein lies the need for a student of library and information science to know the process of research. Such a knowledgeable person will be better equipped to serve the scientist and other research workers.

Scientific research in librarianship is a careful process by which librarians can acquire more accurate knowledge and understanding of libraries and librarianship. Knowledge about the numerous facets of library and Information science can be obtained by asking questions, thinking of possible answers and testing the possibilities by means of careful inquiry. Specifically, a researcher in library and Information science should have a clear grasp of the user’s behaviour, nature and demand of the clientele, size and nature of the library, types of collection it possess and above all the type storage and extent of continuous advancement taking place in information technology. The researcher in information science runs the risk of being out-dated if he/she is not dynamic enough to keep track of these fast developments. A more careful and concerned researcher on the other hand may bring in inestimable benefits to a developing country like India if he/she succeeds in laying hands on the most suitable technology for the taming of so many otherwise intractable problems of under development.

2 Meaning and Definition of Research

Research simply means search for facts – answer to questions and solutions to problems. It is a purposive investigation. It is an “organised inquiry”2 It seeks to find explanations to unexplained phenomenon, to clarify the doubtful facts and to correct the misconceived facts.

Therefore, search for facts should be made by scientific method rather than by arbitrary method. Then only we may get verifiable and accurate facts. Hence Research is a systematic and logical study of an issue or problem or phenomenon through scientific method. An analysis of

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the definitions given by notable authorities may reveal the proper meaning and nature of the concept of research.

D. Slesinger and M. Stepahesion in the Encyclopedia of Social Science, define research as "the manipulation of things, concepts or symbols for the purpose of generalizing to extend correct over verify knowledge, whether that knowledge aides in construction or in the practice of on ask."

Kerlinger defines research as a "systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena." The term "systematic, controlled, empirical and critical" describe the characteristics of scientific method. Whether research needs to be an "investigation of hypothetical propositions about presumed relations" is debatable. Research does not always call for a hypothesis. It may also be carried out for the discovery of hypotheses.

Emory defines research as "any organized inquiry designed and carried out to provide information for solving a problem." The definition is an inclusive one. But it emphasises the problem-solving purpose only. Research may also aim at finding answer to questions.

3 Characteristics of Research

The above definitions reveal the various characteristics of research:
1. Research is a systematic and critical investigation into a phenomenon.
2. It is not a mere compilation, but a purposive investigation; it aims at describing, interpreting and explaining a phenomenon.
3. It adopts scientific method.
4. It is objective and logical, applying possible tests to validate the measuring tools and the conclusions reached.
5. It is based upon observable experience or empirical evidence.

6. Research is directed towards finding answers to pertinent questions and solutions to problems.

7. It emphasises the development of generalization, principles or theories.

8. The purpose of research is not to arrive at an answer which is personally pleasing to the researcher, but rather one which will stand up the test of criticism.⁵

4 Objectives of Research

The objectives of research are varied⁶. They are:

1. Research extends knowledge of human beings, social life and environment. Scientists and researchers build up the wealth of knowledge through their research findings. They search answers for various types of questions: What, Where, When, How and Why of various phenomena, and enlighten us. The bodies of knowledge have been developed by research in general and pure of fundamental research in particular.

2. Research brings to light information that might never be discovered fully during the ordinary course of life. For example, marketing research could result in discovery of new uses for an old product.

3. Research establishes generalizations and general laws and contributes to theory building in various fields of knowledge. Our knowledge of separately known events is connected together to draw generalizations and general laws. Law of gravitation, Law of Demand, and principles of organization such as unity of command and scalar principle, the theory of consumer behaviour and motivation theories are some examples for such generalizations, laws and theories.

4. Research verifies and tests existing facts and theory and these help improving our knowledge and ability to handle situations and events. Merton argues: “Empirical research goes far beyond the passive role of verifying and testing theory...Research plays an active role, it performs at least four major functions...It initiates, it formulates, it deflects, and it clarifies theory.”⁷

⁶ Krishnaswami, O. R., Methodology of Research in Social Sciences, Bombay, Himalaya, 1998--------
⁷ Merton, Robert, K., Social Theory and Social Structure, New York, Free Press, p.103.
5. General laws developed through research may enable us to make reliable predictions of events yet to happen.

6. Research aims to analyse inter-relationships between variables and to derive causal explanations: and thus enable us to have a better understanding of the world in which we live.

7. Applied research aims at finding solutions to problems..socio-economic problem (e.g., social unrest, unemployment, poverty) health problems, human relations problems in organizations and so on. Thanks to the fruits of research, we have better quality of life, longer life span, better control over events.

8. Research also aims at developing new tools, concepts, and theories for a better study of unknown phenomena.

9. Research aids planning and thus contributes to national development. Research-social science research in particular-aids planning in the following ways:

   Research brings our factual data on prevailing situations and problems for drawing up plans and schemes on a realistic basis. Research uncovers needed facts on which sound decisions can be made before committing resources. Studies open up the possibility of testing the validity of planning assumptions or premises.

   Research studies enable the planners to evaluate alternative strategies and choose the most appropriate strategies for development of the various sectors like agriculture, industry, education, health, social welfare, Library and Information Systems and Services etc.

5 Research Process

Before embarking on the details of research methodology and techniques, it seems appropriate to present a brief overview of the research process. Research process consists of series of actions or steps necessary to effectively carry our research and the desired sequencing of these steps.
RESEARCH PROCESS IN FLOW CHART

Where

F = feed back (Helps in controlling the sub-system to which it is transmitted)
FF = feed forward (Serves the vital function of providing criteria for evaluation)
The chart indicates that the research process consists of a number of closely related activities, as shown through I to VII. But such activities overlap continuously rather than following a strictly prescribed sequence. At times, the first step determines the nature of the last step to be undertaken. If subsequent procedures have not been taken into account in the early stages, serious difficulties may arise which may even prevent the completion of the study. One should remember that the various steps involved in a research process are not mutually exclusive; nor they are separate and distinct. They do not necessarily follow each other in any specific order and the researcher has to be constantly anticipating at each step in the research process the requirements of the subsequent steps. However, the following order concerning various steps provides a useful procedural guideline regarding the research process: (1) formulating the research problem; (2) extensive literature survey; (3) developing the hypothesis; (4) preparing the research design; (5) determining sample design; (6) collecting the data; (7) execution of the project; (8) analysis of data; (9) hypothesis testing; (10) generalisations and interpretation, and (11) preparation of the report or presentation of the results, i.e., formal write-up of conclusions reached.

6 Research Design

The formidable problem that follows the task of defining the research problem is the preparation of the design of the research project, popularly known as the "research design". Decisions regarding what, where, when, how much, by what means concerning an inquiry or a research study constitute a research design. "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." In fact, the research design is the conceptual structure within which

research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data.

As such the design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data. More explicitly, the design decisions happen to be in respect of:

(i) What is the study about?
(ii) Why is the study being made?
(iii) Where will the study be carried out?
(iv) What type of data is required?
(v) Where can the required data be found?
(vi) What periods of time will the study include?
(vii) What will be the sample design?
(viii) What techniques of data collection will be used?
(ix) How will the data be analysed?
(x) In what style will the report be prepared?

Keeping in view the above stated design decisions, one may split the overall research design into the following parts:

(a) the sampling design which deals with the method of selecting items to be observed for the given study; the observational design which relates to the conditions under which the observations are to be made;

(b) the statistical design which concerns with the question of how many items are to be observed and how the information and data gathered are to be analysed; and

(c) the operational design which deals with the techniques by which the procedures specified in the sampling, statistical and observational designs can be carried out.

From what has been stated above, we can state the important features of a research design as under:

(i) It is a plan that specifies the sources and types of information relevant to the research problem.
(ii) It is a strategy specifying which approach will be used for gathering and analysing the data.

(iii) It also includes the time and cost budgets since most studies are done under these two constraints.

In brief, research design must, at least, contain – (a) a clear statement of the research problem; (b) procedures and techniques to be used for gathering information; (c) the population to be studied; and (d) methods to be used in processing and analysing data.

6.1 Need for Research Design

Research design is needed because it facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible yielding maximal information with minimal expenditure of effort, time and money. Just as for better, economical and attractive construction of a house, we need a blueprint (or what is commonly called the map of the house) well thought out and prepared by an expert architect, similarly we need a research design or a plan in advance of data collection and analysis for our research project. Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of staff, time and money. Preparation of the research design should be done with great care as any error in it may upset the entire project. Research design, in fact, has a great bearing on the reliability of the results arrived at and as such constitutes the firm foundation of the entire edifice of the research work.

6.2 Features of a Good Design

A good design is often characterised by adjectives like flexible, appropriate, efficient, economical and so on. Generally, the design which minimises bias and maximises the reliability of the data collected and analysed is considered a good design. One single design cannot serve the purpose of all types of research problems.
A research design appropriate for a particular research problem, usually involves the consideration of the following factors:

(i) the means of obtaining information;
(ii) the availability and skills of the researcher and his staff, if any;
(iii) the objective of the problem to be studied;
(iv) the nature of the problem to be studied; and
(v) the availability of time and money for the research work.

6.3 Different Research Designs

Different research designs can be conveniently described if we categorize them as: (1) research design in case of exploratory research studies; (2) research design in case of descriptive and diagnostic research studies, and (3) research design in case of hypothesis-testing research studies.

The difference between research designs in respect of the above two types of research studies can be conveniently summarised in tabular from as under:

<table>
<thead>
<tr>
<th>Research Design</th>
<th>Types of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exploratory of Formulative</td>
</tr>
<tr>
<td>Overall design</td>
<td>Flexible design (design must provide opportunity for considering different aspects of the problem)</td>
</tr>
<tr>
<td>(i) Sample Design</td>
<td>Non-probability sampling design (purposive or judgement sampling)</td>
</tr>
<tr>
<td>(ii) Statistical Design</td>
<td>No pre-planned design for analysis</td>
</tr>
<tr>
<td>(iii) Observational design</td>
<td>Unstructured instruments for collection of data</td>
</tr>
<tr>
<td>(iv) Operational design</td>
<td>No fixed decisions about the operational procedures</td>
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</tbody>
</table>
Types of Research

7.1 Pure Research

Pure research is undertaken for the sake of knowledge without any intention to apply it in practice, e.g., Einstein's theory of relativity, Newton’s contributions, Galileo's contributions, etc.

Pure research is also known as basic or fundamental research. It is undertaken out of intellectual curiosity or inquisitiveness. It is not necessarily problem-oriented. It aims at extension of knowledge. It may lead to either discovery of a new theory or refinement of an existing theory. The development of various science owes much to pure research. The findings of pure research enrich the storehouse of knowledge that can be drawn upon in the future to formulate significant practical researches. In the words of Dixey, "natural knowledge pursued for its own sake without any direct view to future utility will often lead to results of most unexpected kind and of very highest practical importance." Thus, pure research lays the foundation for applied research. The findings of pure research formed the basis for innumerable scientific and technological inventions like steam engine, machines, automobiles, electronic gadgets, electronic data processing, telecommunication, etc., which have revolutionised and enriched our human life.

7.2 Applied Research

Applied research is carried on to find solution to a real-life problem requiring an action or policy decision. It is thus problem-oriented and action-directed. It seeks an immediate and practical result, e.g., marketing research carried on for developing a new market or for studying the post-purchase experience of customers.

There is vast scope for applied research in the fields of technology, management, commerce, economics and other social sciences.

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Innumerable problems are faced in these areas. They need empirical study for finding solutions.

Though the immediate purpose of an applied research is to find solutions to a practical problem, it may incidentally contribute to the development of theoretical knowledge by leading to the discovery of new facts or testing of a theory or to conceptual clarity.

7.3 Action Research

Action research is a type of evaluation study. It is a concurrent evaluation study of an action programme launched for solving a problem/for improving an existing situation.

This plethora of development programmes has given impetus to action research. With the pressing need to assess the relative effectiveness of different approaches to the same goal or the worthwhileness of one goal as against another, research has been called upon to play a closer and relevant role for action. The criterion of relevance for action is of critical importance in action research.

Types of Research

<table>
<thead>
<tr>
<th>Definition and Scope</th>
<th>Pure Research</th>
<th>Applied Research</th>
<th>Action Research</th>
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<tbody>
<tr>
<td></td>
<td>It is the formal and systematic process of deductive-inductive analysis, it is concerned with elucidating concepts and their relations, hypotheses, ultimately leading to development of theories. It is concerned with understanding.</td>
<td>It adapts the theories, developed through pure research to the solution of problems. Thus, it is concerned with getting things done.</td>
<td>It focuses on the immediate application.</td>
</tr>
<tr>
<td>Limitations</td>
<td>It has little concern with application of findings to actual problems faced by persons other than the</td>
<td>It is not concerned with development of theory.</td>
<td>It is carried out in a particular setting without any assumption about</td>
</tr>
<tr>
<td>Pure Research</td>
<td>Applied Research</td>
<td>Action Research</td>
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<td></td>
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<tr>
<td>investigator himself. It is not directly related to technical and practical problems.</td>
<td></td>
<td>the general application of the finding beyond the situation being studied. It is neither concerned with development of a theory nor upon general applications.</td>
<td></td>
</tr>
<tr>
<td><strong>Purposes</strong></td>
<td>Its aim is to develop theories by discovering broad generalizations or principles. It is primarily interested in deriving new knowledge. Sometime, pure research is described as research conducted to acquire knowledge for its sake. Probably, this is a simplistic point of view.</td>
<td>Its aim is to apply pure research for the benefit of society. Thus, it emphasizes the solving of specific problems in real life situations.</td>
<td>It aims to apply scientific method to the solution of problems in a local setting.</td>
</tr>
<tr>
<td><strong>Settings</strong></td>
<td>It is usually carried out in laboratory situation, often using animals as subjects of study.</td>
<td>It tests theoretical concepts in actual problem situations.</td>
<td>It is carried out in a particular setting (local setting).</td>
</tr>
<tr>
<td><strong>Procedures</strong></td>
<td>It uses sampling procedures to extend the findings of a study beyond the group or situation being studied.</td>
<td>It processes most of the characteristics of pure research. It uses sampling techniques and inferences regarding target population.</td>
<td>It uses the same procedures as used in pure research.</td>
</tr>
<tr>
<td><strong>Rigorousness</strong></td>
<td>Processes rigorous qualities of research.</td>
<td>Processes rigorous qualities of research.</td>
<td>Scientific thinking methods are applied to problems taken</td>
</tr>
<tr>
<td>Pure Research</td>
<td>Applied Research</td>
<td>Action Research</td>
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<tr>
<td></td>
<td></td>
<td>from real-life situations. It does not possess the rigorous qualities of pure and applied research.</td>
<td></td>
</tr>
<tr>
<td>Applicability</td>
<td>It has little concern with application of the findings to the actual problems.</td>
<td>Solution to the problems has general applicability (general or universal validity).</td>
<td>Solution to the problems has only local applicability. That is the solutions are determined without any considerations or assumptions about their general application beyond the situation being studied.</td>
</tr>
<tr>
<td>Examples</td>
<td>1. The development and testing of theories of behavior (behavioral sciences). 2. Development and testing of theories of how students behave in an educational setting (education). 3. A few studies in library and information science can be regarded as examples of pure of basic research because they are not directed towards practical applications of</td>
<td>1. Most educational research is applied research because it aims to develop generalizations about teaching-learning process and instructional materials. 2. Evaluation of a library service. 3. How to make each type of library more effective?</td>
<td>1. How to make a particular library effective?</td>
</tr>
</tbody>
</table>
8 Research Method

Broadly speaking, there are three major research methods, viz., historical, survey, and experimental, through which research is usually conducted.

8.1 Historical Method

History is said to be the story of humankind understood in a social context. An inquiry into the past in a systematic manner, is what we call historical research. It helps us to understand why, how and when past events occurred, which in turn aids anticipation of future developments in any field of activities affecting decision making in the present set up. In Library and Information Science, the study of history or an application of the historical research method is usually called “Library History”. Library history, as defined by Charles H. Busha and Stephen P. Harter “is the systematic recounting systematically arranged collections of recorded information or knowledge”. Historical information, which may range from official records, newspaper, annual reports, manuscripts, etc. to eyewitness and oral history records. The data collection phase in historical research requires a high level of competency to establish the authenticity of the sources of information.

Historical method in Library and Information Science can be applied to write the biography of a person (e.g. Ranganathan, Dewey, Cutter, Poole and others) or in the development of a library during a particular period (e.g. Bodlean Library, Library of Congress, National Library etc.), or to record the history of libraries in a country, or history of development of a library technique (e.g. indexing, classification), etc. Though the historical method is often criticised for its heavy reliance on secondary sources, it is one of the methods best suited to look into the social, economic, political
and cultural environment in which libraries and library science have been instituted. Pierce Butler in his Introduction to Library Science emphasizes that librarianship can be fully appreciated only through an understanding of its historical origins.

8.2 Descriptive / Survey Method

Survey research has been widely used in social and behavioural Sciences. It deals mainly with collection, analysis and presentation of data relating of the present time, reflecting the present state of affairs in social, economic and political activities. The most commonly used survey method is the 'opinion poll' during election periods. Similarly an inquiry into the category of survey research. Another kind of survey research can be the study of psychological phenomenon of a group of individuals (e.g. attitude, behaviour, motivation, etc.). Survey research is a method of gathering empirical data regarding certain phenomenon, process or object in a systematic way so as to interpret them in a broader perspective for generalizations.

Survey research is commonly used in Library and Information Science. However, it is used differently in different contexts. Some well known examples of survey research from Library and information Sciences are: (a) Community Survey to know the characteristics of the population being served by a library or to be served by a proposed library, (b) Library Survey to ascertain the resources of library or a group of libraries and their growth in a particular period, (c) Users' Survey or Users' Studies to determine the utilization of library resources, satisfaction of the clientele and their need. Survey research is characterised by a selection of a sample for the inquiry, design of data collection instruments, administration or conduct of the study, design of presentation of report. There are various ways through which data are collected in survey research (e.g. observation, schedule etc.), questionnaire, interview. It is, therefore, for that purpose. The success of the survey research method depends on proper selection of representative samples from the population and
unbiased data collection. This method can easily be used and is effective when the target group is very large and widespread across a large geographical area.

8.3 Experimental Method

This is the most rigorous of all research methods. The method has its origin in science, where the researcher has the power to control the variables/factors for conducting experiments. In Social Sciences, the experimental method is an extension of survey research having characteristics of an experiment. Control is one of the differential characteristics of the experimental method. This means that the experimental method uses a control group and one or more experimental groups (subjects). In social sciences, the subjects of investigation are usually individuals and the control group is kept under observation for comparison and contrast with the experimental groups. It is highly essential however that the control group and experimental groups possess almost equivalent characteristics though complete equivalence is impossible due to the nature of the subjects (i.e. the individuals in society). Experimental research may lead to establish casual relationships and can provide an answer as to why certain phenomena occur or what would happen if a particular factor changes.

In Library and Information Science, experimental method can be used to investigate the following: efficiency of classification schemes, effect of book display on use, impact of bibliographic instruction on library use and students' performance, innovative methods of collection developments, uses of catalogue and the extent of retrieval success in the shelf, etc.

8.4 Scientific Method

Scientific method is a philosophy / thinking or a guideline to the whole realm of research. Unless a research is based on scientific methodology, the result is not considered reliable and valid. There is a ladder of steps which make up a scientific methodology. These logical
steps in scientific investigation are: (1) identification of problem; (ii) formulation of hypothesis; (iii) collection of data; (iv) analysis and testing of hypothesis; and (v) broad generalisation or formulation of laws. If the laws thus formulated, hold good through a period of time then they are accepted and theories are constructed. Scientific method is concerned with verification of acquired knowledge.

Scientific research is always open for refutation. In other words, the research is considered complete as if holding the final say on the topic in question. The hallmark of scientific research, therefore, lies in providing for the necessary scope and direction in the body of the research, so that the methods adopted and conclusions drawn can be further checked. The researcher should always suggest the direction in which future research on the topic itself and its related aspects can be carried out. Scientific research is thus verifiable and therefore, always open-ended.

9 Data Collection Techniques

9.1 Interview

The interview method is a kind of verbal technique for obtaining data. It is the most commonly used method of data collection in the study of human behaviour. It is a direct method of data collection. According to P.V. Young, "Interview may be regarded as a systematic method by which a person enters more or less imaginatively into the life of a comparative stranger."

Objectives of Interview
The objectives of interview are mainly of two kinds:
1. Laboratory study of verbal behavioural pattern under given circumstances.
2. Securing information from the person who alone knows the subject of the matter. Under these two headings, we can classify the objectives in the following way:
I. Formulation of hypothesis.
II. Collecting information about unknown facts through personal contact.
III. Collecting information about qualitative facts.
IV. Improving the method of observation.
V. Collecting information about various problems in different circumstances.

Types of Interviews

The types of interviews may be classified on the basis of the grounds, as given in the following chart.

9.2 Observation

The term observation is used to indicate that "the object or subject of an investigation of being subjected to close usually visual surveillance and
that the information obtained (i.e. the observation in the form of recorded data) will then be related to more general propositions or theories"\(^\text{10}\) (Busha, 1980). Observation is the oldest of the techniques for collecting facts about the object of research. It means seeing things with a purpose.

Much of Social Science research has been and will continue to be the study of human behaviour through direct observation. This is also applicable in the library science research. Study of the users' behaviour in the library, functioning of a library system etc. requires the use of observation techniques extensively. Observational strategies are seen as excellent research techniques to be utilized in gathering data. In the words of Sproul “Observation method is a data collection method in which a person (usually trained) observes subjects or phenomena and records information about characteristics of the phenomena.

A researcher in the course of his study observes numerous things, but takes into account only those that are relevant. Observation is thus always selective. It is the technique used for collecting facts through the use of sensory organs like eyes, ears and nose. However, observation is not just sensation – it demands concentration on the object of research. Thus, attention is another component of observation. In observation, facts are recognised only when, the relationship is seen between sensation and previous knowledge or experience. This is known as perception. Thus observation comprises; sensation, attention and perception.

Observation techniques are generally categorised as: participant or non-participant; obtrusive or unobtrusive; controlled or uncontrolled and finally structured or non-structured.

9.3 Scheduled

The Meaning of Schedule

A schedule is a list of questions, which helps to collect data or requisite information. In this method, the investigator himself presents the

Both questionnaires and schedules are very similar; but they also differ in some respects. A questionnaire is sent to the respondents by mail, whereas a schedule is used directly in interviews.

**Features of Schedule**

1. The list of questions is a more document, so it need not be very attractive.
2. The schedule can be used in a limited area of research.
3. The schedule is put directly by the researcher and he also notes the answers down.

**Types of Schedules**

According to P.V. Young, the schedule can be divided into the following four parts: \(^{11}\)

1. Observation Schedules.
4. Rating Schedules.
5. Interview Schedules.

\*9.4 Questionnaire*

**Definition**

A questionnaire method is that method in which a number of printed questions is used for collecting data. This list of questions questionnaire they return it to the investigator. The questionnaire method has been defined by different sociologists in difficult ways. According to Bogardus, “a questionnaire is a list of questions sent to a number of persons for them to answer. It secures standardised results that can be tabulated and treated statistically”.

\(^{11}\) Young, Pauline V, Scientific Social Survey and Research, New Delhi, Pretice-Hall, 1977, p. 129.
Purpose of Questionnaire
i) To collect information from the respondents who are scattered in a vast area.
ii) To achieve success in collecting reliable and dependable data.

Types of Questionnaire

P.V. Young has classified the questionnaires into two groups\(^{12}\), i.e.,
i) Structured Questionnaires.  Non-structured Questionnaires.

A 'Structure' Questionnaire contains definite, concrete and preordained questions. This type of questionnaire is prepared in advance and not on the spot during the questioning period. The structured questionnaires are used in a wide range of projects. The method is used to initiate a formal enquiry and also to supplement and check data previously accumulated. There are mainly used in studies of economic and social problems, studies of administrative policies and changes, studies on the cost of living, consumer expenditures, public health and many other issues.

A Non-structured questionnaire is used as a guide at the time of interview. In this method, the interviewer is free to arrange the form and timing of enquiry. Flexibility is the main advantage of this method. This method is applied to studies of family group cohesiveness, to studies of personal experiences, beliefs, attitudes and the like.

The questionnaire is also divided into different types on the basis of nature of the questions. The various types are given below:
(i) Open (ii) Closed (iii) Mixed (iv) Pictorial.

The Importance of Questionnaire method

The questionnaire method occupies an important place in social research for various reasons which are enumerated below:
(1) The questions which are included in the list of questionnaire are standardised. The questions are real and create interest to the informants.
(2) This is an indirect method of collection of data.

\(^{12}\) Young, Pauline V, Scientific Social Survey and Research, New Delhi, Pretice-Hall, 1977, p. 129.
(3) By this method, a respondent acquires some knowledge about many fields that were unknown to him.

(4) In this method, the researcher or investigator does not have to make any administrative arrangements.

(5) The method is economical.

(6) Through this method, a vast area and population can be studied easily.

9.5 CASE STUDY

This is very good method of collecting information about an individual, a family, or a group of persons. It is an intensive study through which one can know precisely the factors and causes of a particular phenomenon. It is a kind of qualitative analysis. According to P.V. Young, "case study is a method of exploring and analysing the life of a social unit, be it that a person, a family, an institution, cultural group or even entire community."

Characteristic of Case Study Method

(1) The Study of the Whole Unit. In this study, a large variety of units are selected for study and the size of the unit may be quite large to cover an entire community. In a word, this method treats an individual, an institution or a group of persons as a whole.

(2) Intensive Study. It aims at deep, and thorough study of a unit. It deals with every aspect of a unit and, studies it intensively.

10. Analysis and Interpretation

After the collection of research data, an analysis of the data and the interpretation of the results are necessary. Analysis of data comes prior to interpretation. But these two operations are so mixed up that they cannot be regarded as two separate operations. There is something more crucial than the facts and figures in research. The purpose of research is to find out that something. The purpose of analysis is to build up a sort of intellectual model where the relationships involved are carefully brought out so that some meaningful inferences can be drawn. Facts are never
innocuous. They involve both subjective and objective elements. Facts and figures are to be seen in the perspective of objectivity.

Analysis of data is to be made with reference to the purpose of the study and its possible bearing on the scientific discovery: An analysis is made with reference to the research problems at hand or the hypothesis. Some authors consider processing a necessary prerequisite for analysis, but many maintain that analysis of data involves processing. In other words, these two operations can be simultaneously made.

11. Research Methodology

Method means the mode or rule of accomplishing an end. Methodology means a system of methods and rules applicable to research. It is connected basically with principles and techniques to be followed for collecting data, information and material for a given research project.

The researcher has followed the research methodology in the study for achieving the aforesaid objectives is as follows.

1. The survey of literature on: (a) the topic of, (b) library automation, and (c) telematics in general at international and national level.
2. By consolidating the suggestion got during discussion and by reviewing the literature, analysing, and interpreting suitably to control and computerise the house keeping routines such as circulation and serials using software.
3. Personal visits and interview at the university libraries.
4. Discussion with computer experts and librarians.
5. Questionnaires were circulated to each university library for getting the primary data and their reactions.
6. Secondary data were collected from the university budgets and annual reports of university libraries.
7. Random sampling method is used to collect the data regarding the adequacy and users' expectation.
8. Narrative method is used with a description of systems annotation and interpretation.
9. Flowcharts are given for the entire house keeping functions, information storage and retrieval.
REFERENCES: