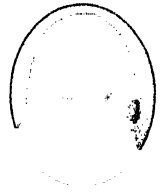


# Research Methodology

**ABSTRACT:** *Research is an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison and experiment. In short the search for knowledge through objective and systematic method of finding solution to a problem is Research.*



**Dr MRS VAISHALI AJAY BHAGAT MD (Homoeopathy)**  
 Lecturer Anatomy, BV UHMC, Pune  
 Chief Editor, Student NJH

**DEFINITION:** Research is a scientific and systematic search for pertinent information on a specific topic. It also means a careful investigation or inquiry especially through search for new facts in any branch of knowledge, in other words, systematized effort to gain new knowledge. It is actually a voyage of discovery.

According to Clifford Woody, research comprises defining and redefining problems, formulating hypothesis or suggested solutions, collecting, organising and evaluating data, making deductions and reaching conclusions and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

**PURPOSE OF RESEARCH:** To discover answers to questions through the application of scientific procedures.

**AIM:** To find out the truth which is hidden and/or which has not been discovered as yet.

**OBJECTIVES:** To gain familiarity with a phenomenon or to achieve new insights into it.

To portray accurately the characteristics of a particular individual, situation or a group.

To determine the frequency with which something occurs or with which it is associated.

To test a hypothesis of a casual relationship between variables.

## TYPES OF RESEARCH

The basic types of Research are as follows

➤ **DESCRIPTIVE OR ANALYTICAL:** It includes surveys and fact finding enquiries of different kinds. The

methods of research utilized in descriptive Research are survey methods of all kinds including comparative and co-relational methods. In analytical research the researcher has to use facts or information already available and analyse these to make a critical evaluation of the material.

➤ **APPLIED OR FUNDAMENTAL:** Applied research aims at finding a solution for an immediate problem faced by a society or an industrial business organisation.

Fundamental Research is mainly concerned with generalisation and with the formulation of theory. Gathering knowledge for knowledge sake is termed pure or basic research.

Research concerning some natural phenomenon or relating to pure mathematics are examples of fundamental Research.

➤ **QUANTITATIVE VERSUS QUALITATIVE:** Quantitative Research is based on the measurement of quantity or amount. Qualitative Research is concerned with qualitative phenomenon. Qualitative Research is especially important in the behavioural science where the aim is to discover the underlying motives of human behaviour.

➤ **CONCEPTUAL VERSUS EMPIRICAL:** Conceptual Research is related to some abstract idea(s) or theory. It is generally used by philosophers and thinkers to develop new concepts or to re-interpret existing ones. Empirical Research re-

lies on experience or observation alone, often without due regard for system and theory. It is data based Research coming up with conclusions which are capable of being verified by observation or experiment. We can also call it as experimental type of Research. In such a Research it is necessary to get all facts first-hand at their source, and actively to go about doing certain things to stimulate the production of desired information.

In such a Research, the Researcher must first provide himself with a working hypothesis or guess as to the probable results. He then works to get enough facts (data) to prove or disprove his hypothesis. He then sets up experimental designs which he thinks will manipulate the persons or materials concerned so as to bring forth the desired information. Such Research is thus characterised by the experimenter's control over the variables under study and his deliberate manipulation of one of them to study its effects.

**SOME OTHER TYPES OF RESEARCHES**

1. One time research or longitudinal Research.
2. Field setting Research or Laboratory Research.
3. Clinical or Diagnostic Research.
4. Histological Research.

Research can also be classified as Conclusion oriented and Decision oriented.

Here a Researcher is always free to pick up a problem, redesign the enquiry as he proceeds and is prepared to conceptualise as he wishes in conclusion and in other for the need of a decision maker and the Researcher. In this case he is not free to embark upon research according to his own inclination.

**RESEARCH APPROCHES**

1. Quantitative approach
2. Qualitative approach

**SIGNIFICANCE OF RESEARCH**

Research includes scientific and inductive thinking and it promotes the development of logical

habits of thinking and organization.

The role of Research in several fields of applied economics, whether related to business or economy as a whole greatly increase modern times. Research provides the basis for nearly all government policies in economic systems.

Research has its special significance in solving various operational and planning problems of business and industry. Research is equally important to scientist in studying social relationship and in seeking answers to various social problems. The intellectual satisfaction of knowing a few things just for the sake of knowledge and also has practical utility for the social scientist to know for the sake of being able to do something better or in a more efficient manner.

A science is to develop a body of principles that make possible the understanding and prediction of the whole range of humane interactions. On the other hand because of its social orientation, it is increasingly being looked to for practical guidelines and solving immediate problems of human relations.

**THE SIGNIFICANCE OF RESEARCH CAN ALSO BE UNDERSTOOD KEEPING IN VIEW THE FOLLOWING POINTS:**

1. To those students who are to write matter or PhD thesis, Research may mean careerism or a way to attend a high position in the social structure.
2. To professionals in Research methodology, Research may mean a source of livelihood.
3. To philosophers and thinkers, Research may mean the outlet for new ideas and insights.
4. To literary man and woman Research may mean the development of new styles and creative work.
5. To analysts and intellectuals Research may mean the generalization of new theories.

Research methodology is a way to systematically solve the Research problems. It may be understood as a science of study and 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. It is necessary for the Researcher to know not only the research methods/ techniques but also the methodology.

Researcher needs not only to know how to develop certain insides or taste, how to calculate the mean, mode, median or the standard deviation or chi-square, how to apply particular Research techniques, but they also need to know which of these methods or techniques, are relevant and which are not, and what would they mean and indicate and why. Researchers need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not.

Thus, when we talk of Research methodology we 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 other so that Research results are capable of being evaluated either by the Researcher himself or by others.

**THE SCIENTIFIC METHOD IS THUS, BASED ON CERTAIN BASIC POSTULATES WHICH ARE STATED AS UNDER.**

1. It relies on empirical evidence.
2. It utilizes relevant concept.
3. It is committed to only objective consideration.
4. It purposes ethical naturalist, eg it aims at nothing but making only adequate and correct statements about population objects.
5. It results into probabilistic predictions.
6. It aims at formulating most general axioms or what can be termed as scientific theories.

**GUIDANCE 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. Exclusion of the project.

8. Analysis of data.
9. Hypothesis testing.
10. Generalization and interpretation.
11. Preparation of the report or presentation of the results e.g. Formal write up of conclusions Researched.

The problem to be investigated must be defined unambiguously for that will help to discriminate relevant data from irrelevant ones. Care must however be taken to verify the objectivity and validity of the background facts concerning the problem.

**DEVELOPMENT OF WORKING HYPOTHESIS.**

After extensive literature survey, Researcher should state in clear terms the working hypothesis. It is a tentative assumption made in order to draw out and taste its logical or empirical consequences. As such the manner in which Research hypothesis develop is particularly important since they provide the focal point of the Research.

Hypothesis should be very specific and limited to the piece of Research in hand because it has to be tested. The role of the hypothesis is to guide the Researcher by delimiting the area of the Research and to guide him on the right tract. His sharpness is in his thinking and focus attention on the more important facts of the problem. It also indicates the type of data required and the type of data analysis to be used.

**PREPARING THE RESEARCH DESIGN**

The Research having been formulated in clear-cut terms, the Researcher will be required to prepare Research design. Eg He will have to state the conceptual structure within which Research would be conducted. The preparation of such design facilitates Research to be as efficient as possible yielding maximum information.

Research purposes may be grouped into four categories

1. Exploration.
2. Description.
3. Diagnosis.
4. Experimentation

**THE PREPARATION OF THE RESEARCH DESIGN appropriate**

for a particular Research problem, involves usually the consideration of the following:

1. The means of obtaining the information.
2. The availability and skill of the Researcher and his staff (if any).
3. Explanation will be organized and reasoning leading to the selection.
4. The time available for the Research.
5. The cost factor relating to Research e.g. the finance available for The purpose.
6. Determining sample design: The entire item under consideration of any field of inquiry constitute 'universe' or 'population', for instance blood testing is done only on sample basis. Hence, quite often we select only a few items from the universe for our study purpose. The item so selected constitutes what is technically called as sample.

**SAMPLE DESIGN IS AS FOLLOWS**

- i. Deliberate sampling.
- ii. Simple random sampling.
- iii. Systematic sampling.
- iv. Stratified sampling.
- v. Quota sampling.
- vi. Cluster sampling and area sampling
- vii. Multistage sampling.
- viii. Sequential sampling.

**COLLECTING THE DATA**

Primary data can be collected either through experiment or survey.

Data can be collected by any one or more of the following ways.

1. By observation.
2. Through personal interviews.
3. Through telephone interviews.
4. By mailing questionnaires.
5. Through schedules: The Researcher should select one of these methods of collecting the data taking into consideration the nature of investigation objective and scope of the inquiry. Financial resources available time and the design degree of accuracy.

**EXECUTION OF THE PROJECT**

The survey is under statistical control so that the collected information is in accordance with the predefine standard of accuracy.

**ANALYSIS OF DATA**

After the data has been collected the Researcher turns to its analysis. The analysis of the data require a number of closely related operations such as establishment of categorisers, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences. Thus Researcher should classify the raw data into some purposeful and usable categories

1. Coding.
2. Editing.
3. Tabulation.

**HYPOTHESIS TESTING**

After analysing the data as stated about, the Researcher is in position to test the hypothesis if any he had formulated earlier. Do the facts support the hypothesis or they happen to be contrary? This is the usual questions which should be answered while testing hypothesis. Various test, such as chi square, T test, F test have been developed by statisticians for the purpose. The hypothesis may be tested through the use of one or more of such test, depending upon the nature and object of Research inquiry.

**GENERALISATION AND INTERPRETATION**

If a hypothesis is tested and upheld several times, it may be possible to arrive at generalisation, to build theory.

**PREPARATION OF THE REPORT OR THE THESIS**

Finally the Researcher has to prepare the report of what has been done by him. Writing of the report must be done with great care keeping in view the following.

The layout of the report should be as follows:

1. Preliminary page.
2. The main text.
3. The end matter.

In its PRELIMINARY PAGES the report should carry Title and Date followed by Acknowledgements and

Forward.

Then there should be Table of Contents followed by a list of Tables and list of Graphs and Charts if any given in the report.

The MAIN TEXT of the report should have the following parts:

- A) INTRODUCTION: It should contain a clear statement of the objective of the Research and explanation of the methodology adopted in accomplishing the Research. Thus scope of the study along with various limitations should be stated in this part.
- B) SUMMARY OF FINDINGS: After introduction there would appear a statement of finding and recommendation in nontechnical languages. If the findings are extensive, they should be summarised.
- C) MAIN REPORT: The main body of the report should be presented in logical sequence and broken down into readily identifiable sections.
- D) CONCLUSIONS: Towards the end of the main text Researcher should again put down the result of Research clearly and precisely in fact, it is the final summing up.
  1. In the end of the report Appendices should be enlisted in respect of all technical data. Bibliography eg. List of books, Journals, Reports, etc consulted should also be given in the end. Index should also be given specially in a published Research report.
  2. Report should be written in a concise and objective style in simple language avoiding vague expressions such as it seems there may be and the like.
  3. Charts and illustrations in the main report should be used only if they present the information more clearly and forcibly.
  4. Calculated confidence limits must be men-

tioned and the various constrains experienced in conducting Research operation may as well be stated.

Problems encountered by Researchers in India. Some of the important problems are as follows:

1. The lack of scientific training in the methodology of Research. Effort should be made to provide short duration intensive courses for meeting this requirement.
2. Insufficient interactions. Effort should be made to develop satisfactory liaisons among all concern for better and realistic Researcher.
3. There is the need for generating the confidence that the information data obtained from a business unit will not be misused.
4. Research studies overlapping one another are undertaken quite often for want of adequate information.
5. There does not exist a code of conduct for Researchers and interuniversity and interdepartmental rivalries are also quite common.
6. Difficulty of adequate and timely secretarial assistance.
7. Library management functioning is not satisfactory at many places and much of the time and energy of Researchers are spend in tracing out the books, journals, reports, etc, rather than in tracing out relevant material from them.
8. There is also the difficulty of timely availability of published data form.
9. There is also the problem that many of our libraries are not able to get copies of old and new acts/rules, reports and other government publication in time.

There may, at times, occur the problems of concept utilization and also problems relating to the process of data collection and related things.



Santa got an invitation to a party which said 'pink tie only'  
When he went to the party, he was surprised to find that others were wearing pants and shirt also!