

# Glimpse on Methods of Finding: A survey

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**Abstract**—Research is reading good books, magazines, searching internet and talking to the experts who with a strong moral character have made and are still making the great contributions to world. The intention of research is to start from known things and finding out unknown facts. Communicate these facts to the world by publicizing and help the research community to grow and contribute to the development of the society. In this paper we have proposed different approaches to carryout research and a skeleton of publishing the articles

**Keywords**— Research Methodology, Types of Research, Characteristics of research, Literature survey.

## I. INTRODUCTION

Research is the systematic investigation and study of materials and sources to establish facts and new conclusions. It shapes people's understanding of the world around them. Through research findings, psychologists are able to explain individuals' behavior including persons' thinking and acting. The research helps to determine disorder and impact on the person and society, thus leading to the developments of appropriate treatments to individuals' quality of life.

Research is searching for and gathering information usually to answer a particular question or problem. A research project of various types and complexity are the integral part of the college experience and offers the opportunity to learn lot of valuable skill sets. In fact, the ability to locate, evaluate the information is the essence of research and a valuable skill in many areas of life. Research can be defined as,

- The detailed study to discover the new facts which are beneficial to human society
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- It is the process of understanding cause and effect of existing phenomenon leading to the discovery of new phenomenon
- It is the process of creating a solution to particular problem
- It is the process of making the complicated procedures simple by the way of in depth analysis
- It is the way of inventing different scientific methods to solve particular problem

## A. Characteristics of research

Research is a process of collecting, analyzing and interpreting information to answer the questions. But to qualify as research, it should have certain characteristics

- It should able to control the effects of other factors that affect the relationship between the given variables
- one must be rigorous and scrupulous in ensuring that the procedures followed to find the answer to the questions are relevant, appropriate and justified
- The procedures adopted to undertake the research should follow certain logical sequence
- The findings of the research must be valid and verifiable
- Any conclusion drawn in the research should be based on the hard evidence gathered from information collected from real life experiences or observations
- The process of investigation must be foolproof and free from drawbacks. The process adopted and procedures used must be able to withstand critical scrutiny

## B. Types of research

on the application, objectives and mode of enquiry conducted, the research may be classified as shown in the Fig 1.

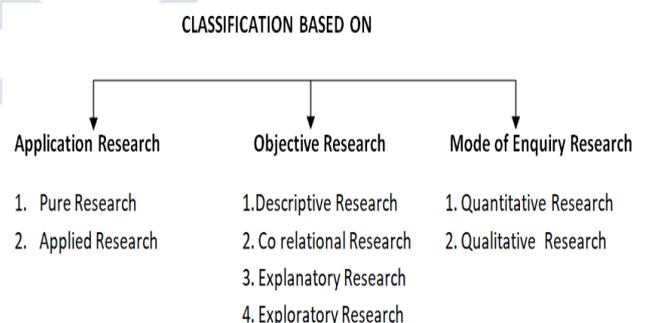


Fig. 1. Classification of Research work

- Pure research:** Pure research involves developing and testing theories and hypothesis that are intellectually challenging to the researcher but, May or may not have practical application at the present time or future. The knowledge produced through pure research is sought in order to add to the existing body of research methods
- Applied research:** it is done to solve specific and practical questions such as policy formation, administration and understanding of phenomenon.

Usually applied research is carried out by academic and industrial institutions

- c) Descriptive research: It attempts to describe systematically the situation, problem, phenomenon, service or program me or service provider's information etc.
- d) Co relational research: It attempts to discover or establish the existence of relationship between two or more aspects of a situation
- e) Explanatory research: It attempts to clarify why and how there is a relationship between two or more aspects of a situation or phenomenon
- f) Exploratory research: It is undertaken to explore an area where little is known or to investigate the possibilities of undertaking a particular research study
- g) Quantitative research: Here everything that forms a research process- Objectives, Design, Sample and questions that you plan to ask of respondents is predetermined It is more appropriate to determine the extent of a problem, issue or phenomenon by quantifying the variation.
- h) Qualitative research: This approach allows the flexibility in all the aspects of research processes. Here it explores the nature of problem, issue or phenomenon without quantifying it

## II. RESEARCH PROCESS

Main objective of research is to provide a solution to the defined problem. It consists of a sequence of steps or measures that are necessary to carry out a research in effectual way. Fig 2 shows stages of research process.

To carry out research process researcher has to perform the following steps:

- (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) Generalizations and interpretation, and
- (11) Preparation of the report or presentation of the results.

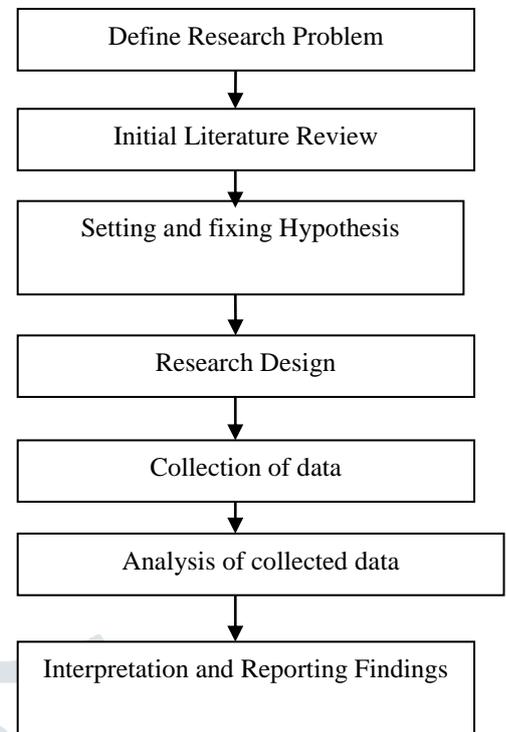


Fig. 2. Research Process

### 1) Formulating the research problem:

The two types of research problems are those which relate to states of nature and those which relate to relationships between variables. To begin with the researcher must find out the problem he wants to study. At the outset the problem must be stated in an extensive general way and then if any uncertainties relating to the problem be resolved. Then, the possibility of a particular solution has to be considered before a working formulation of the problem can be set up. Thus the first step in a scientific enquiry constitutes the formulation of a general topic into a specific research problem. Basically formulating the research problem involves two steps namely thorough understanding of the problem and restating the same into meaningful terms of logical view.

The finest way to understand the problem is to discuss it with one's own colleagues or with the experts in particular field. In an academic institution the researcher can seek the help from a guide who is usually an experienced man and has several research problems in mind. Usually, the guide dictates the problem in general terms and it is up to the researcher to narrow it down and phrase the problem in operational terms. In private business units or in executive organizations, the problem is usually allocated by the executive assistances with whom the researcher can discuss about the origin of the problem and what deliberations are involved in its possible solutions.

### 2) Extensive literature survey:

Once the problem is designed, brief down the problem statement. It is mandatory for a researcher write a thesis for a Ph.D. degree, to write a synopsis of the topic and submit it to the necessary Committee or the Research Board for approval. At this stage the researcher should undertake extensive literature survey with respect to the problem. To begin with this, the first place to visit will be the abstracting and indexing journals and published or unpublished bibliographies, Conference proceedings, government reports, academic journals, books etc. The one plus point in this process is that one source will lead to another. The earlier studies, which are related to the study should be carefully studied. A good library is a great benefit to the researcher at this stage.

3) *Development of working hypotheses:*

After a wide literature survey, researcher should clearly state the working hypothesis. Working hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences. The methodologies by which the hypotheses develop plays an important role as they provide the focal point for research. They also affect the way in which tests must be conducted in the analysis of data and indirectly the quality of data which is required for the analysis. Since the hypothesis has to be tested it should be very specific and limited to the respective problem definition. The hypothesis sets the framework for researcher by delimiting the area of research. It refines his thinking and concentrations on the key factors of the problem. It also indicates the type of methods and type of data required for data analysis to be used. Following are the ways used to develop working hypotheses,

- Discussions with colleagues and experts about the problem, its origin and the objectives in seeking a solution;
- Examination of data and records, if available, concerning the problem for possible trends, peculiarities and other clues;
- Review of similar studies in the area or of the studies on similar problems; and
- Exploratory personal investigation which involves original field interviews on a limited scale with interested parties and individuals with a view to secure greater insight into the practical aspects of the problem.

Thus, working hypotheses ascend as a result of a-priori thinking about the subject, examination of the available data and material including related studies and the counsel of experts.

4) *Preparing the research design:*

Having been formulated the research problem in specific terms, the next path the researcher have to follow is to prepare a research design, i.e., he will have to state the conceptual structure within which research would be conducted. The role of research design is to provide the pool of applicable suggestion with marginal expenses of effort, time and money. Achieving all of this depends of the purpose of the research. Research purposes may be grouped into four categories namely (i) Exploration, (ii) Description, (iii) Diagnosis, and (iv) Experimentation. A flexible research design is said to be exploration when it affords opportunities for considering many various facets of a problem. But when the purpose happens to be an accurate description of any condition or of that of an association between variables, the suitable design will be one that maximizes the reliability and minimizes bias of the data collected and analyzed.

There are some research designs, such as, non-experimental and experimental hypothesis testing. Experimental designs can be either informal designs or formal designs, among these the researcher must choose one for his work.

The preparation of the research design usually involves;

- i. the means of obtaining the information;
- ii. the availability and skills of the researcher and his staff (if any);
- iii. explanation of the way in which selected means of obtaining information will be organized and the reasoning leading to the selection;
- iv. the time available for research; and the cost factor relating to research, i.e., the finance available for the purpose.

5) *Determining sample design:*

The researcher must opt sample design for selecting the samples. In other words, a sample design is a definite plan determined before collection of actual data for obtaining a sample from a particular population. Samples can be either non-probability samples or probability samples. With probability samples each element has a known probability of being included in the sample but the non-probability samples do not allow the researcher to determine this probability. Probability samples are those based on systematic sampling, simple random sampling, cluster/area sampling, stratified sampling whereas non-probability samples are those based on convenience sampling, judgment sampling and quota sampling techniques.

6) *Collecting the data:*

There are several ways of collecting the appropriate data which differ significantly in terms of money costs, time and other resources at the clearance of the researcher. Primary data can be collected either by experimentation or through survey. If the researcher performs an experiment, he notices some computable measurements, or the data, which in turn helps him in examining the facts enclosed in the hypothesis. While doing survey there are many ways through which we can collect data:

- i. **By observation:** The process of this method involves the gathering of information by the investigator in his own way of observation, without interrogating the respondents. The data attained relates to current happenings and is not complex by either attitudes of respondents, future intentions or the past behavior. This method is expensive and gives us very less information. As such this method is not suitable in inquiries where large samples are concerned.
- ii. **Through personal interview:** The investigator prepares a pre-conceived questions and seeks answers to a set of pre-conceived questions through personal interviews. This process of gathering data is usually carried out in a organized manner where quality of the output depends upon the capability of the interviewer to a greater extent.
- iii. **Through telephone interviews:** This process relies on collecting information which involves contacting the respondents on telephone itself. This method is rarely followed but it plays an significant role in industrial surveys in urbanized regions, mostly, when the survey has to be accomplished in a very limited time.
- iv. **By mailing the questionnaires:** In this method the researcher and the respondents communicate directly with each other. Questionnaires are mailed and respondents are requested to return after completing the same. It is the most widely used method in numerous economic and business surveys. To begin with this method, usually a Preliminary Study for testing the questionnaire will be conducted which discloses the faults. Questionnaire used must be prepared very carefully to be effective in gathering the relevant information.
- v. **Through schedules:** In this method the enumerators are selected and training is given. They are provided with the schedules comprising related questions. These enumerators go to respondents with these schedules. Data are collected by filling up the schedules by enumerators on the basis of replies given by respondents.

7) *Execution of the project:*

In the research process project execution is a very important step. The data to be collected would be adequate and dependable if the project proceeds in the right direction. It is

the responsibility of the researcher to see to it that the project is executed in a systematic manner and in time. The data can be readily machine-processed, if the survey is conducted by means of structured questionnaires. In such a situation, questions as well as the possible answers may be coded. If the data are to be collected through interviewers, preparations should be made for proper selection and training of the interviewers. The training may be carried out with the instruction manuals which help to understand the job clearly at each step. Special field checks must be carried out to make sure that the interviewers are doing their assigned job sincerely and efficiently. While there is a non cooperation from some of the respondents, some suitable methods should be adopted to tackle this problem. One method of dealing with the non-response problem is to make a list and take a sub-sample of them, and then with the help of experts vigorous efforts can be made for securing response.

#### 8) *Analysis of data:*

Once the data has been collected, the researcher begins with the task of analyzing them. The analysis of data requires a number of carefully related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences. The heavy data should essentially be summarized into a few manageable groups and tables for further analysis. Thus, researcher should classify the raw data into some purposeful and usable categories.

Analysis of the tabulated work is generally based on the computation of various percentages, coefficients, etc., by applying various well defined statistical formulae. In the process of analysis, relationships or variances supporting or conflicting with original or new hypotheses should be subjected to tests of significance to conclude with what validity data can be said to indicate any conclusion(s). In brief, the researcher can analyze the composed data with the help of several statistical measures.

#### 9) *Hypothesis-testing:*

After analyzing the data as stated above, the researcher is now capable to carry out the test on the hypotheses, if any, he had formulated earlier. Do the facts support the hypotheses or they happen to be contrary? This is the common question which must be answered while testing hypotheses.

Various tests, such as Chi square test, t-test, F-test, have been developed by statisticians for the purpose. One of the above tests can be used to carry out tests, depending upon the nature and object of research inquiry. Hypothesis-testing will result in either accepting the hypothesis or in rejecting it. If the researcher had no hypotheses to start with, generalizations established on the basis of data may be stated as hypotheses to be tested by subsequent researches in times to come.

#### 10) *Generalizations and interpretation:*

If a hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalization, i.e., to build a theory. As a matter of fact, the real value of research lies in its ability to arrive at certain generalizations. If the researcher had no hypothesis to start with, he might seek to explain his findings on the basis of some theory. It is known as interpretation. The process of interpretation may quite often trigger off new questions which in turn may lead to further researches.

#### 11) *Preparation of the report or the thesis:*

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

The layout of the report should be as follows: (i) the preliminary pages; (ii) the main text, and (iii) the end matter.

In its preliminary pages the report should carry title and date followed by acknowledgements and foreword. Then there should be a 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 an explanation of the methodology adopted in accomplishing the research. The scope of the study along with various limitations should as well be stated in this part.
- b) **Summary of findings:** After introduction there would appear a statement of findings and recommendations in non-technical language. If the findings are extensive, they should be summarized.
- c) **Main report:** The main body of the report should be presented in logical sequence and broken-down into readily identifiable sections.
- d) **Conclusion:** Towards the end of the main text, researcher should again put down the results of his research clearly and precisely. In fact, it is the final summing up.

At the end of the report, appendices should be enlisted in respect of all technical data. Bibliography, i.e., list of books, journals, reports, etc., consulted, should also be given in the end.

1. 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 mentioned and the various constraints experienced in conducting research operations may as well be stated.

### III. CONCLUSION

There is no standard methodology to carryout research. There is, on the other hand, a there are lot of other methods and techniques for dealing with the various problems that arise in this endeavor. With different approaches taken up, every time a new problem will arise or at least it brings out the incompleteness of the traditional approaches that has given a solution. In this paper we have discussed few approaches in a general way to carryout research activity.

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