Module 1

Introduction

The word research is composed of two syllables "Re" and "Search". "Re" is the prefix meaning 'Again or over again or a new' and "Search" is the latter meaning 'to examine closely and carefully' or 'to test and try'. Together they form, a careful, systematic, patient study and investigation in some field of knowledge undertaken to establish principles / policies.

Meaning of Research: Research can be defined as

1. Search for knowledge

2. Systematic and scientific search for getting relevant answers on any taken up specific topic.

3. Scientific enquiry into a subject.

4. Research is a movement from the unknown to the known.

5. It is the voyage of discovery

Clifford Woody - Research comprises 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 formulated hypothesis.

D. Slesinger and M. Stephenson in the Encyclopedia of Social Sciences define research as "the manipulation of things, concepts or symbols for the purpose of generalizing, to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice".

Bulmer- Research is primarily committed to establishing systematic, reliable and valid knowledge about the social world.

Thus research is the search for knowledge through objective and systematic method for finding solution to a problem.

Objectives of Research: The objective of research is to find answers to the questions by applying scientific procedures. In other words, the main aim of research is to find out the truth which is hidden and has not yet been discovered. Although every research study has its own specific objectives, the research objectives may be broadly grouped as follows:

1.To gain familiarity with a phenomenon or to achieve new insights into it (exploratory or formulative research studies)

2. To portray accurately the characteristics of a particular individual, situation or a group (descriptive research studies)

3. To determine the frequency with which something occurs or with which it is associated with something else (diagnostic research studies)

4. To test a hypothesis of a causal relationship between variables (hypothesis-testing research studies)

Motivation in Research: The intention of doing research may be one or more of the following:

1. Get a research degree along with its consequential benefits

2. Face the challenges in solving the unsolved problems, i.e., concern over practical problems initiates research

3. Intellectual joy of doing some creative work

4. Service to society

5. Get respect.

Factors like directives of government, employment conditions, curiosity about new things, desire to understand causal relationships, social thinking and awakening, and the like may as well motivate people to carry research.

Research Methods versus Methodology:

Research methods may be understood as all those methods/techniques that are used for conduction of research. Research methods or techniques thus, refer to the methods the researchers use in performing research operations.

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 the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them

Research Method	Research methodology
Research methods refers to all those methods/techniques that are used for conduction of research. Research methods or techniques	Research methodology is a way to systematically solve the research problem. The scope of research methodology is wider than that of research methods
It involves conduction of experiments, tests, surveys etc	Techniques that can be used to conduct the experiments, tests etc
Aims at finding a solution to the research problem.	Aims at employment of correct procedure to find the solution

Types of Research:

1. Descriptive Vs Analytical Research

Descriptive research consists of surveys and fact-finding enquiries of different types. The main objective of descriptive research is describing the state of affairs as it prevails at the time of study. The term 'ex post facto research' is quite often used for descriptive research studies in social sciences and business research. The most distinguishing feature of this method is that the researcher has no control over the variables here. He/she has to only report what is happening or what has happened. Majority of the ex post facto research projects are used for descriptive studies in which the researcher attempts to examine phenomena, such as the consumers' preferences, frequency of purchases, shopping, etc. Despite the inability of the researchers to control the variables, ex post facto studies may also comprise attempts by them to discover the causes of the selected problem. The methods of research adopted in conducting descriptive research are survey methods of all kinds, including correlational and comparative methods. Meanwhile in the Analytical research, the researcher has to use the already available facts or information, and analyze them to make a critical evaluation of the subject. Descriptive is fact finding to describe the state of affairs Analytical Research is using already available information and analyse to make a critical evaluation of the material.

2. Applied Vs Fundamental Research

An attempt to find a solution to an immediate problem encountered by a firm, an industry, a business organization, or the society is known as applied research. Researchers engaged in such researches aim at drawing certain conclusions confronting a concrete social or business problem Fundamental research mainly concerns generalizations and formulation of a theory. In other words, ―Gathering knowledge for knowledge's sake is termed pure or basic research (Young in Kothari, 1988). Researches relating to pure mathematics or concerning some natural phenomenon are instances of Fundamental Research. Likewise, studies focusing on human behavior also fall under the category of fundamental research. Applied aims at finding a solution to the problem faced by the society/ organization. Fundamental Research is concerned with generalization and formulation of a theory

3. Quantitative Vs Qualitative Research

Quantitative research relates to aspects that can be quantified or can be expressed in terms of quantity. It involves the measurement of quantity or amount. Various available statistical and econometric methods are adopted for analysis in such research. Which includes correlation, regressions and time series analysis etc . Qualitative research is concerned with qualitative phenomena, or more specifically, the aspects related to or involving quality or kind. For example, an important type of qualitative research is Motivation Research', which investigates into the reasons for certain human behavior. The main aim of this type of research is discovering the

underlying motives and desires of in-depth interviews. The other techniques employed in such research are story completion tests, sentence completion tests, word association tests, and other similar projective methods. Qualitative research is particularly significant in the context of behavioral sciences, which aim at discovering the underlying motives of human behavior. Quantitative research is based on quantitative measurements of some characteristics Qualitative research is concerned with qualitative phenomenon

4. Conceptual vs. Empirical

The research related to some abstract idea or theory is known as Conceptual Research. Generally, philosophers and thinkers use it for developing new concepts or for reinterpreting the existing ones. Empirical Research, on the other hand, exclusively relies on the observation or experience with hardly any regard for theory and system. Such research is data based, which often comes up with conclusions that can be verified through experiments or observation. Empirical research is also known as experimental type of research, in which it is important to first collect the facts and their sources, and actively take steps to stimulate the production of desired information. In this type of research, the researcher first formulates a working hypothesis, and then gathers sufficient facts to prove or disprove the stated hypothesis. He/she formulates the experimental design, which according to him/her would manipulate the variables, so as to obtain the desired information. The results obtained by using the experimental or empirical studies are considered to be the most powerful evidences for a given hypothesis. Conceptual research is related to some abstract ideas. Empirical research is data based research which relies on observation or experience.

5. Some other types of research

- One-time research or longitudinal research- depends upon the time of doing research.
- Field-setting research or laboratory research or simulation research- depends upon the environment in which research is carried on.
- Clinical or diagnostic research- in-depth approaches or case study method may be employed to analyses the basic causal relations.
- Exploratory research- consist of substantial structure and specific hypotheses to be verified.
- Historical Research- sources like historical documents, remains, etc. Are utilized to study past events or ideas.

Research Approaches: The above description of the types of research shows that there are two basic approaches to research, viz., quantitative approach and the qualitative approach.

Quantitative approach can be further sub-classified into

Inferential research - inferential approach to research is to form a data base from which to infer characteristics or relationships of population. This usually means survey research where a sample

of population is studied (questioned or observed) to determine its characteristics, and it is then inferred that the population has the same characteristics

Experimental research- characterized by much greater control over the research environment and in this case some variables are manipulated to observe their effect on other variables

Simulation research- Simulation approach involves the construction of an artificial environment within which relevant information and data can be generated. This permits an observation of the dynamic behavior of a system (or its sub-system) under controlled conditions

Qualitative approach to research generates results either in non-quantitative form or in the form which are not subjected to rigorous quantitative analysis. Generally, the techniques of focus group interviews, projective techniques and depth interviews are used.

Significance of Research:

- Research inculcates scientific and inductive thinking and promotes the development of logical habits of thinking.
- Research provides the basis for all government policies in our economic system.
- Research has its special significance in solving various operational and planning problems of business and industry
- Research is equally important for social scientists in studying social relationships and in seeking answers to various social problems.

(a) To those students who are to write a master's or Ph.D. thesis, research may mean a careerism or a way to attain a high position in the social structure

(b) To professionals in research methodology, research may mean a source of livelihood

(c) To philosophers and thinkers, research may mean the outlet for new ideas and insights

(d) To literary men and women, research may mean the development of new styles and creative work

(e) To analysts and intellectuals, research may mean the generalizations of new theories.

Criteria of Good Research: Whatever may be the types of research works and studies, one thing that is important is that they all meet on the common ground of scientific method employed by them. One expects scientific research to satisfy the following criteria.

1. The purpose of the research should be clearly defined and common concepts be used.

2. The research procedure used should be described in sufficient detail to permit another

researcher to repeat the research for further advancement, keeping the continuity of what has already been attained.

3. The procedural design of the research should be carefully planned to yield results that areas objective as possible.

4. The researcher should report with complete frankness, flaws in procedural design and estimate their effects upon the findings.

5. The analysis of data should be sufficiently adequate to reveal its significance and the methods of analysis used should be appropriate. The validity and reliability of the data should be checked carefully.

6. Conclusions should be confined to those justified by the data of the research and limited to those for which the data provide an adequate basis.

7. Greater confidence in research is warranted if the researcher is experienced, has a good reputation in research and is a person of integrity.

In other words, we can state the qualities of a good research as under:

1. Good research is systematic: It means that research is structured with specified steps to be taken in a specified sequence in accordance with the well-defined set of rules. Systematic characteristic of the research does not rule out creative thinking but it certainly does reject the use of guessing and intuition in arriving at conclusions.

2. Good research is logical: This implies that research is guided by the rules of logical reasoning and the logical process of induction and deduction are of great value in carrying out research. Induction is the process of reasoning from a part to the whole whereas deduction is the process of reasoning from some premise to a conclusion which follows from that very premise. In fact, logical reasoning makes research more meaningful in the context of decision making.

3. Good research is empirical: It implies that research is related basically to one or more aspects of a real situation and deals with concrete data that provides a basis for external validity to research results.

4. Good research is replicable: This characteristic allows research results to be verified by replicating the study and thereby building a sound basis for decisions.

Research Process:

Research process consists of series of actions or steps necessary to effectively carry out research and the desired sequencing of these steps.

The various steps in a research process are as follows:

(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

(11) preparation of the report or presentation of the results, i.e., formal write-up of conclusions reached.

(1) Formulating a Research problem: In research process, the first step a researcher does is formulate a problem and define it properly. Research forms a circle. It starts with a problem and ends with a solution to the problem.

A research problem is anything that a researcher finds unsatisfactory or unsettling, a difficulty of some sort, a state of affairs that needs to be changed, anything that is not working well as it was expected (Creswell, 2009)

A problem statement consists of four parts:

- The ideal
- The reality or real situation
- The consequences or impacts,
- What the study wants to address or the aim of the study.

(2) Extensive Literature Survey: abstracting and indexing Journals, conference proceedings, government reports, books etc.

(3) Development of Working Hypothesis: A tentative assumption made to test its logical or empirical consequences. The role of hypothesis is to guide the researcher by delimiting the area and keep him on right track

Steps to develop a working hypothesis:

Discussions with colleagues and experts about the problem, its origin and the objectives in seeking a solution

- Examination of data and records.
- Review of similar studies in the area or of the studies on similar problems
- Exploratory personal investigation which involves original field interviews on a limited scale with interested parties and individuals.

(4) Prepare the Research Design: state the conceptual structure within which Research will be conducted. Several research designs- Experimental and Non-Experimental Hypothesis testing. Experimental design can be either informal or formal

(5) Determining Sample Design:

Census Survey, Sample Survey

Types of Sampling

- Deliberate sampling
- Simple random sampling
- Systematic sampling
- Stratified sampling
- Quota sampling
- Cluster sampling and area sampling
- Multi-stage sampling
- Sequential sampling

(6) Data Collection:

- Observation
- Personal Interview

- Telephone Interview
- Questionnaires
- Schedules

(7) Execution of the Project: In a systematic manner and time

(8) Analysis of Data: The analysis of data requires a number of closely related operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inferences.

(9) Hypothesis Testing: Various tests, such as Chi square test, t-test, F-test, have been developed by statisticians for testing the hypothesis. The hypotheses may be tested through the use of one or more of such tests, depending upon the nature and object of research inquiry. Hypothesis-testing will result in either accepting the hypothesis or in rejecting it.

(10) Generalization and Interpretations: If a hypothesis is tested and upheld several times, researcher may 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.

(11) Report or thesis writing:

(a) layout

- Preliminary pages
- Main text
- End matter

(b) concise and objective style in simple language avoiding vague expressions such as 'it seems,' 'there may be', and the like.

(c) Charts and illustrations should be used only if they present the information more clearly and forcibly.

(d) various constraints experienced in conducting research operations must be mentioned.