

CHAPTER: – ONE

Research Methods: An Introduction

Research is most frequently used terminology in different academic and business institutions. Research as conscious and creative human activity involves discovering and learning new things. Where there is a problem there is always a research. It is an essential tool for understanding the events and structures of the social world. Research can mean different things to different people. People have defined research differently according to their perception. Here under we will see different definitions and perceptions of individuals about research

1.1. Meaning of Research

Different authors in many ways have defined the word research. *Research* commonly refers to a search for knowledge. Some people consider research as a movement from known to unknown. It is indeed a voyage of knowledge. For some people on the other hand research implies an art of scientific investigation to the state of nature or phenomenon. Authors are increasingly adding new names and definition for different kinds of research. However, to avoid confusion and unnecessary cumbersome let us confine ourselves to the definitions of research given by selected authors.

Hertz provided the most simplified definition of research. His definition referred research to the original and creative activities. According to him, *Research is the application of human intelligence in a systematic manner to a problem whose solution is not immediately available.*

Woody on the other hand defined research as *an activity comprises of defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deduction and reaching at conclusion to determine whether they fit the formulated hypothesis.*

An author called Klopsteg gives the most comprehensive definition of research. According to him; *'Research is original and creative intellectual activity, carried out in the laboratory, the library or in the field which endeavors to discover new facts and to apprise and interpret them properly in the light of previous knowledge. With constantly increasing understanding, it revises previously accepted conclusion, theories and laws, and makes new application of its findings. Whether it seeks to extend knowledge for its own sake or to achieve results with specific economic or social value, its raison detre is its contribution to human welfare.*

According to this definition, research is carried out not only in the laboratory but also it can be carried out in different places like in the library and in the field as well. Research is not only original and creative activity. It will not always discover new facts. It can also revise and verify the validity of previously accepted facts theories and principles, which is the task of academic or basic research.

1.2. Motivation of doing research

Research is not a trouble-free duty rather it is time consuming, tiresome and expensive undertaking. Despite these all difficulties many people especially in academic institute would like to carry out research at least once in their life. What are the possible motives of individuals to undertake research work?

The possible motives for doing research can be either one or a combination of the following:

- *Desire to get degree with its consequential benefit.* The graduate and postgraduate students are required to carryout research project as a partial fulfillment to obtain their master and Ph.D. Degree. Research is therefore, a prerequisite to complete their study.
- *Desire to get respect and promotion (to own respect in society).* In academic and research institutions publication is crucial for promotion and academic rank. **“Publish or perish”** is a phrase commonly used in experienced and well-established academic institutes. This implies an individual should carry out a research activity and publish his findings in scientific or international journal in order to get

respect and academic rank. If not the individual will "**perish**" meaning no proportion or academic rank and hence no respect is possible for that individual in the academic environment

- **Desire to face a challenge in solving the unsolved problem.** Concern over a particular problem initiates a researcher.
- **Desire to get intellectual joy of doing some creative work.** Doing or participation in some creative activity will give some professional satisfaction to many individuals. Research will give this opportunity.
- **Directive of government.** Government sometimes gives directives to its employees to carry out a particular study and investigation for better decision-making ground. Ideally any policy before implementation requires detail study and analysis of its impact on different parts of the society.
- **Employment condition.** Some employers set as criteria at least one publication in international journal.
- Desire to be of service to society;
- Desire to get respectability and,
- Many other factors

1.3 Purposes of research

The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet or to verify or reject that the existing phenomenon (theory, principle or law) accepted as true. Though each research study has its own specific purpose, we may think of research objectives as falling into a number of following broad groupings:

1. To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as exploratory or formularize research studies);
2. To show accurately the characteristics of a particular individual, situation or a group (studies with this object in view are known as descriptive research studies);
3. To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies);
4. To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis-testing research studies).

Any research has got the following common (general) objectives.

- To generate new knowledge, principle and scientific law
- To review and synthesize existing knowledge. That is, to verify the validity of the previous work.
- To investigate some existing situation or problem
 - To explain new phenomenon
 - To examine the cause of the problem
 - To examine the nature of the problem
- To provide solution to a problem
- To construct or create a new procedure and new system
- A combination of any one of the above

1.4 Managerial Value of Business Research

The prime managerial value of business research is that it provides information that improves the decision-making process. The decision-making process associated with the development and implementation of a business strategy involves four interrelated stages:

1. Identifying problems or opportunities
2. Diagnosing and assessing problems or opportunities
3. Selecting and implementing a course of action
4. Evaluating the course of action

1.5 Characteristics of a 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 are as 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.*

1.6. Types of Research

Like its definition research has been classified differently. Generally research can be classified on the basis of the following traits.

I. On the basis of the outcome of the research: Whether the research tries to solve a particular problem or makes a general contribution to the knowledge, research can be

a) Fundamental Research:

Fundamental research is also called academic or basic or pure research. Such research is aimed at investigating or search for new principles and laws. It is mainly concerned with generalization and

formulation of a theory. Fundamental research is organized only for the attainment of knowledge and truth. With change of time and space, it is necessary to make a change in the fundamental principles in every branch of science; thus, this type of research also verifies the old established theories, principles and laws.

In general, fundamental research is concerned with the theoretical aspect of science. In other words it studies the laws of nature, with out or regardless of the immediate application of its findings.

E.g.,

- The relationship between crime and economic status is an example of pure (academic) research.
- Darwin Theory of Evolution
- Newton's Law of Motion
- Einstein Theory of Relativity

b) Applied research

A research aimed at finding a solution for an immediate problem facing a society, a group or industry (business organization). The results of such research would be used by either individuals or groups of decision-makers or even by policy makers. While pure research discovers principles and laws, applied research discovers their application in solving some social, economical or any other problems.

E.g.,

- The improvement of safety in the working place
- The reduction of wastage in the working places is example of applied research.

Types of Applied researches

Social impact Analysis: - The major purpose of social impact assessment is to estimate the likely consequences of a planned change. Such an assessment can be used for planning and making choices among alternative policies. Researcher conducting social impact assessment examines many outcomes and often works in an interdisciplinary research team.

Potential areas assessed in social impact analysis.

- Community service (School enrolment, speed of policy respond)
- Social conditions (crime rate etc)
- Economic impact (change in income level)
- Demographic consequences (change in the mix of old and young people, population movement in or out of the area)
- Environment impact
- Health outcomes

Evaluation research: - Evaluation research is widely used type of applied research that addresses the question, "did it work?" Evaluation is a process of establishing value judgment based on evidence. Evaluation research measures the effectiveness of a program, policy, or way of doing something. Some example of evaluation research questions is, does the new incentive scheme improve workers job performance? Does the environmental policy improve the environmental problem of the city? Individuals involved in a policy or program may conduct evaluation research for their own information or at the request of outside decision makers.

There are two types of evaluation research; **Formative** and **Summative**. Formative evaluation is built in monitoring or continuous feed back on a program used for program management. Collective evaluation looks at final program outcome.

Applied research being impact analysis or evaluation research uses two tools namely; Need **assessment** and **Cost Benefit Analysis**.

Need assessment: A researcher collects data, to determine major needs and their severity. It is often a preliminary step before deciding on a strategy to help people. A researcher may confirm dilemmas or difficult issues. A good need assessment identifies both the expressed and less valuable needs of a target group, as well as the more serious or widespread needs. A researcher must trace links among related needs to identify those of highest priority.

Cost benefits analysis. This is commonly used in social impact analysis. Economists developed cost benefit analysis, in which the researcher estimates the future costs and the expected benefits of one or several proposed actions and gives them monetary values

II. On the basis of the purpose (The reason why a research is conducted) it can be-

a) Exploratory research (Pilot Survey)

It is also called preliminary research. As its name implied, such research is aimed at discovering, identifying and formulating a research problem and hypothesis. When there are few or no studies that can be referred such research is needed.

b) Descriptive Research

The main purpose of such research is description of the state of nature or affairs, as it exists at present. In social science and business research we often use the term **ex-post facto research** for descriptive research. The main characteristic of such research is that the researcher has no control over the variables; he can only report what has happened or what is happening.

E.g.

- **What is the absentee rate in a particular office?**
- **What is the qualification of different groups of employment?**
- **Frequency of shopping**
- **Preferences of people**

Ex-post facto studies also include attempts by researchers to discover causes though they cannot control the variables.

Goals of Descriptive research

- To provide an accurate profile of a group
- To describe a processes, mechanism or relationship
- To provide a verbal or numerical picture about a phenomenon
- To find information to stimulate new explanations
- To present basic background information on a context
- To create a set of categories or classify types
- To document information that contradicts prior beliefs about a subject

c). Analytic research

Analytical research on the other hand, goes beyond simple description of the state of nature. When a researcher encounters an issue that is already known and have a description of it, you may begin to ask “why” things are the way they are.

Analytical research uses facts or information already available, and analyzes them to make a critical evaluation of the material. Not only describe the characteristics, but also it analyzes and explains why and how it happened or is happening. The information or facts used here can be either Qualitative or Quantitative.

Goals of analytical research

- To determine the accuracy of a principle or a theory
- To find out which competing explanation is better
- To advance knowledge about an underlying process
- To link different issues or topics under a common general statement
- To build and elaborate a theory so it becomes more complete
- To extend a theory or principle into new areas or issues
- To provide evidence to support or refute an explanation or prediction

E.g.,

- How can we reduce the numbers of complaints made by customers?
- How can we expand the range of our services?
- How can we improve the delivery times of our products?

d) Predictive research

Such research goes beyond explaining why and how things happened. It predicts (forecast) the possible (probability of happening similar situation in other places. It tries to explain about the probability of happening similar thing in the future.

E.g.,

- How would an increase in interest rate affect our profit margin?
- What type of packaging will improve the sales of our products?

III. On the basis of the process of research: That is, on the basis of data used in the research process research can be

a) Qualitative research:

Such research is applicable for phenomenon that cannot be expressed in terms of quantity. Things related to quality and kind. Research designed to find out how people feel or what they think about a particular subject or institution is an example of such research.

b) Quantitative research

Quantitative research is on the other hand is concerned with quantitative phenomenon. It is based on the measurement of quantity or amount. It is applicable for phenomenon that can be expressed in term of quantity.

IV. On the basis of the environment in which the research is carried out research can be

a) Field research

It is a research carried out in the field. Such research is common in social science, agricultural science, history and archeology.

b) Laboratory research

It is a research carried out in the laboratory. These are commonly experimental research.

Such researches are common in medical science, agriculture and in general in natural sciences

c) Simulation research

Such research uses models to represent the real world. Simulation is common in physical science, economics and mathematics.

V. On the basis of the time required to complete the research, research can be

a) One-time research; It is a research limited to a single time period

b) Longitudinal research

Such research is also called on-going research. It is a research carried out over several time periods.

1.7 Research Methods Vs Methodology:

Research methods include all those techniques/methods that are adopted for conducting research. Thus, research techniques or methods are the methods that the researchers adopt for conducting the research studies.

On the other hand, research methodology is the way in which research problems are solved systematically. It is a science of studying how research is conducted scientifically. Under it, the researcher acquaints himself/herself with the various steps generally adopted to study a research problem, along with the underlying logic behind them. Hence, it is not only important for the researcher to know the research techniques/methods, but also the scientific approach called methodology.

1.8 Research Approaches:

There are two main approaches to research, namely quantitative approach and qualitative approach. The quantitative approach involves the collection of quantitative data, which are put to rigorous quantitative analysis in a formal and rigid manner. This approach further includes experimental, inferential, and simulation approaches to research. Meanwhile, the qualitative approach uses the method of subjective assessment of opinions, behavior and attitudes. Research in such a situation is a function of the researcher's impressions and insights. The results generated by this type of research are either in non-quantitative form or in the form which cannot be put to rigorous quantitative analysis. Usually, this approach uses techniques like in-depth interviews, focus group interviews, and projective techniques.

1.9 Research Processes

Before starting the details of research methods, it is appropriate to have a brief overview of the research processes. Research processes consist of a series of actions or steps, which are necessary to successfully carry out research activities.

The research processes consist of a number of closely related activities. These activities (steps) can overlap continuously rather than following a strictly prescribed sequence. The first step can determine the nature of the last step to be undertaken. These steps are not separate and distinct. They do not necessarily follow each other in any specific order Kothari (1990).

However, the following order of steps provides a useful procedural guideline regarding the research processes.

- Identification and Formulating the research problem
- Extensive literature survey
- Developing working hypothesis
- Preparing the research design
- Determine sample design
- Collecting data
- Execution of the project
- Analysis of the data
- Hypothesis testing
- Generalization and interpretation
- Reporting the result

1. Formulating the research problem

There are two types of research problems, viz., those which relate to states of nature and those which relate to relationships between variables. At the very outset the researcher must single out the problem he wants to study, i.e., he must decide the general area of interest or aspect of a subject-matter that he would like to inquire into. The best way of understanding the problem is to discuss it with one's own colleagues

or with those having some expertise in the matter. 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.

2. Extensive literature survey

Once the problem is formulated, a brief summary of it should be written down.

Review concepts and theories

Review previous research finding

3. Development of working hypotheses:

After extensive literature survey, researcher should state in clear terms the working hypothesis or hypotheses. Working hypothesis is tentative assumption made in order to draw out and test its logical or empirical consequences.

How does one go about developing working hypotheses? The answer is by using the following approach:

- (a) Discussions with colleagues and experts about the problem, its origin and the objectives in seeking a solution;
- (b) Examination of data and records, if available, concerning the problem for possible trends, peculiarities and other clues;
- (c) Review of similar studies in the area or of the studies on similar problems; and
- (d) 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.

4. Preparing the research design:

The research problem having been formulated in clear cut terms, the researcher will be required to prepare a research design, i.e., he will have to state the conceptual structure within which research would be conducted.

The preparation of such a design facilitates research to be as efficient as possible yielding maximal information.

These can be achieved depends mainly on the research purpose. Research purposes may be grouped into four categories, viz., (i) Exploration, (ii) Description, (iii) Diagnosis, and

(iv) Experimentation. A flexible research design which provides opportunity for considering many different aspects of a problem is considered appropriate if the purpose of the research study is that of exploration.

5. Determining sample design:

The researcher must decide the way of selecting a sample or what is popularly known as the sample design. In other words, a sample design is a definite plan determined before any data are actually collected for obtaining a sample from a given population.

6. Collecting the data:

There are several ways of collecting the appropriate data which differ considerably in context of money costs, time and other resources at the disposal of the researcher.

- (i) *By observation*
- (ii) *Through personal interview:*
- (iii) *Through telephone interviews:*
- (iv) *By mailing of questionnaires:*
- (v) *Through schedules:*

7. Execution of the project:

Execution of the project is a very important step in the research process. If the execution of the project proceeds on correct lines, the data to be collected would be adequate and dependable. The researcher should see that the project is executed in a systematic manner and in time.

8. Analysis of data:

After the data have been collected, the researcher turns to the task of analyzing them. 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:

After analyzing the data as stated above, the researcher is in a position to test the hypotheses, if any, he had formulated earlier.

This is the usual question which should be answered while testing hypotheses. Various tests, such as Chi square test, t-test, F-test, have been developed by statisticians for the purpose.

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.

11. Preparation of the report or the thesis:

Finally, the researcher has to prepare the report of what has been done by him.

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.