

# Research Methodology

## UNIT- I

### **Meaning of Research :**

Research in common parlance refers to a search for knowledge.

Research Simply put is an endeavor to discover answer to problems (intellectual and practical ) through the application of scientific method to the Knowable universe .

### **Definition of Research :**

Research as “ Systematized effort to gain knowledge ” \_ Redman and Morry .

### **Scope of Research :**

#### **1. Marketing Research :**

Marketing Research is systematic problem analysis, model building and fact finding for the purpose of important decision making and control in the marketing of goods and services. Marketing Research is a well-planned, systematic process which implies that it needs planning at all the stages. It uses scientific method.

#### **2. For Making Government Policy :**

There is also scope for working better with other Government departments. Policy makers in the Department expect to be using evidence in making their decisions. In many areas DWP sponsored research has helped set the policy agenda and in many more it has been used to help design and implement policy.

### **3. Operational Research :**

Operations Research aims to reduce “muddy” business problems into well-defined mathematical constructs, while also defining expected behaviour and goals (well rooted in computer science and analytics).

### **4. Motivational Research :**

Motivational research is a type of marketing research that attempts to explain why consumers behave as they do. Typically, these unconscious motives (or beyond-awareness reasons) are intertwined with and complicated by conscious motives, cultural biases, economic variables, and fashion trends (broadly defined)

### **5. Stimulation Research :**

Using Simulation as Research Method. Simulation is a widely used term and refers to role gaming as well as computer supported calculations to project past and future outcomes. .... Computer software for building simulation models is based on mathematics.

### **Need for Research :**

Research is a tool by which they can test their own, and each others' theories, by using this antagonism to find an answer and advance knowledge. The purpose of research is really an ongoing process of correcting and refining hypotheses, which should lead to the acceptance of certain scientific truths.

Research methodology is the path through which researchers need to conduct their research. It shows the path through which these researchers formulate their problem and objective and present their result from the data obtained during the study period.

Carefully organized and controlled research enables researchers to test and compare different theories and approaches, explore different methods and learn from other people's experience. It also enables them to rule out or at least consider external factors which might influence their results.

### **Importance of Research :**

i. research methods help us get a solution to a problem. ...  
The study of research methodology provides us the necessary training in choosing methods, materials, scientific tools and training in techniques relevant for the problem chosen.

ii. Research methodology is the specific procedures or techniques used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability

iii. Research is a careful and detailed study into a specific problem, concern, or issue using the scientific method. It's the adult form of the science fair projects back in elementary school, where you try and learn something by performing an experiment.

iv. The purpose of research is to inform action. Thus, your study should seek to contextualize its findings within the larger body of research. Research must always be of high quality in order to produce knowledge that is applicable outside of the research setting.

V. Research is the process of solving problems and finding facts in an organised way. .... Research is done by applying what is known (if anything), and building on it. Additional knowledge can be discovered by proving existing theories, and by trying to better explain observations.

Vi . Research is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings..... This definition of research encompasses pure and strategic basic research, applied research and experimental development.

Vii . Research is the process of collecting and analyzing information to increase our understanding of phenomena. This process of inquiry can be as simple as investigating through observation or as complex as experimenting to establish a cause-effect relationship for the events we investigate.

### **Characteristics of Social Research :**

factors are recognized, procedures are described in detail, reference are carefully documented, results are objectively recorded and conclusions are presented with scholarly caution and restraint.

But to qualify as research, the process must have certain characteristics: it must, as far as possible, be systematic, controlled, rigorous, valid and verifiable, empirical and critical.

#### **1. Accuracy & Precision :**

Accuracy and precision are also the basic requirements for a research. A researcher brought its views must be accurate and precise to the problematic situation. For example someone says that the illiteracy or literacy rate in rural areas is 100%.

if you take several measurements and they are all close together then you are being precise but they might all be inaccurate. A footballer hitting the bar of the goal with a succession of shots is being precise but not accurate (assuming the footballer was trying to score a goal).

Example :

Accuracy is how close a value is to its true value. An example is how close an arrow gets to the bull's-eye center. Precision is how repeatable a measurement is.

An example is how close a second arrow is to the first one (regardless of whether either is near the mark).

## **2. Verifiability :**

Another characteristic of research is the researcher must verify data .

It must be subject of verifiability and testability .

Say for Example :

Statement Criminality is due to illiteracy among the people .

## **Evidence of Facts :**

In science, a fact is a repeatable careful observation or measurement (by experimentation or other means), also called empirical evidence. .... Various forms of observation and measurement lead to fundamental questions about the scientific method, and the scope and validity of scientific reasoning.

## **Objectivity :**

Objective evidence is the proof that the organization did or did not meet its requirements. One of the primary objectives of an audit is to collect objective evidence. Not just random objective evidence, but evidence specific to the requirements in the audit.

Objectivity aims to eliminate decisions based on personal bias, cultural differences and any other criterion that cannot be measured or proven. For example, a company could use its income statement to show that it is not doing well instead of the personal opinion of the chief executive.

## **Reliability & Validity :**

Reliability is consistency across time (test-retest reliability), across items (internal consistency), and across researchers (inter rater reliability). Validity is the extent to which the scores actually represent the variable they are intended to. Validity is a judgment based on various types of evidence.

## **Kinds of Research :**

### **01. Experimental Research :**

Experimental research is a scientific approach to research, where one or more independent variables are manipulated and applied to one or more dependent variables to measure their effect on the latter.

Experimental research is research conducted with a scientific approach using two sets of variables. The first set acts as a constant, which you use to measure the differences of the second set. Quantitative research methods

The experimental method involves manipulating one variable to determine if changes in one variable cause changes in another variable. This method relies on controlled methods, random assignment and the manipulation of variables to test a hypothesis.

## **02. Ex Post Facto Research :**

Ex post facto study or after-the-fact research is a category of research design in which the investigation starts after the fact has occurred without interference from the researcher.

The independent variable (IV) is not manipulated; it has already occurred. Less costly and time-consuming to conduct. Establishing cause-effect relationships is more difficult than in experiments. Researcher has little to no control over independent variables.

## **03. Case Study :**

i. "Case study research is a qualitative approach in which the investigator explores a bounded system (a case) or multiple bounded systems (cases) over time through detailed, in-depth data collection involving multiple sources of information (e.g., observations, interviews, audiovisual material, and documents and reports) ..

ii. Case studies are in-depth investigations of a single person, group, event or community. ....The case study is not itself a research method, but researchers select methods of data collection and analysis that will generate material suitable for case studies.

iii. Case studies aim to analyze specific issues within the boundaries of a specific environment, situation or organization. .... This type of case studies focus on phenomena within the contexts of real-life situations

iv. Example : "An investigation into the reasons of the global financial and economic crisis of 2008 – 2010."

v. The general purpose of a case study is to: → describe an individual situation (case), e.g. a person, business, organisation, or institution, in detail; → identify the key issues of the case (your assignment question should tell you what to focus on); → analyse the case using relevant theoretical concepts from your unit ..

## **04. Survey Research :**

i. Survey research a research method involving the use of standardized questionnaires or interviews to collect data about people and their preferences, thoughts, and behaviors in a systematic manner.

ii. Survey research is defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012, p. 160). This type of research allows for a variety of methods to recruit participants, collect data, and utilize various methods of instrumentation

iii. Surveys are used to increase knowledge in fields such as social research and demography. Survey research is often used to assess thoughts, opinions, and feelings. Surveys can be specific and limited, or they can have more global, widespread goals

iv. A survey paper is a service to the scientific community. You are doing their research for them. Instead of reading 20+ papers to understand what a scientific topic is about, they just need to read your paper.

### **05. Descriptive Research :**

i. Descriptive research definition: Descriptive research is defined as a research method that describes the characteristics of the population or phenomenon studied. ... The descriptive research method primarily focuses on describing the nature of a demographic segment, without focusing on “why” a particular phenomenon occurs.

ii. Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, when, where, when and how questions, but not why questions. A descriptive research design can use a wide variety of research methods to investigate one or more variables.

iii. Descriptive research is used to describe characteristics of a population or phenomenon being studied. .... The characteristics used to describe the situation or population are usually some kind of categorical scheme also known as descriptive categories.

iv. For example, the periodic table categorizes the elements.

v. An important characteristic of descriptive research relates to the **fact** that while descriptive research can employ a number of variables, only one variable is required to conduct a descriptive study. Three main purposes of descriptive studies can be explained as describing, explaining and validating research findings.

vi. At its core, descriptive research seeks to describe the characteristics or behavior of an audience. .... The purpose of descriptive research is, of course, to describe, as well as explain, or validate some sort of hypothesis or objective when it comes to a specific group of people.

### **06. Applied / Action Research :**

i. action research refers to a wide variety of evaluative, investigative, and analytical research methods designed to diagnose problems or weaknesses—whether organizational, academic, or instructional—and help educators develop practical solutions to address them quickly and efficiently.

ii. Action research can be defined as “an approach in which the action researcher and a client collaborate in the diagnosis of the problem and in the development of a solution based on the diagnosis”[1]. ....Accordingly, action research is accepted as a method to test hypotheses in a real world environment.

iii. Applied research is socially useful - application of the knowledge generated to social concerns. Action research is useful in solving an immediate, specific problem.

iv. Applied research is designed to answer specific questions aimed at solving practical problems. New knowledge acquired from applied research has specific commercial objectives in the form of products, procedures or services. Fundamental research answers the initial question of how things work.

Example :

investigating which treatment approach is the most effective for reducing anxiety.

Researching which strategies work best to motivate workers.

Studying different keyboard designs to determine which is the most efficient and ergonomic.

### **Research Design :**

The research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data.

A research design is the set of methods and procedures used in collecting and analyzing measures of the variables specified in the problem research.

### **Preparation of Design :**

i. Preparing the Research Design: Preparation of a research design refers to deciding upon the ways and means of collecting evidence, information and data, selection of techniques to be used in the analysis and interpretation of the data for drawing conclusions of the study.

ii. Accurate purpose statement.

iii. Techniques to be implemented for collecting and analyzing research.

iv. Research design is a plan to answer your research question. A research method is a strategy used to implement that plan. Research design and methods are different but closely related, because good research design ensures that the data you obtain will help you answer your research question more effectively.

V . A research design is the set of methods and procedures used in collecting and analyzing measures of the variables specified in the problem research.....A research design is a framework that has been created to find answers to research questions

vi. The method applied for analyzing collected details.

vii. Type of research methodology.

viii. Probable objections for research.

xi. Settings for the research study.

x. Timeline.

xi. Research design is to provide a plan of study that permits accurate assessment of cause and effect relationships between independent and dependent variables. The classic controlled experiment is an ideal example of good research design.

### **Qualities of Good Research :**

- Needs clear understanding of symbol systems and open to questioning and revisions – symbols are subjective and the researcher must understand the varying knowledge and interpretations of the people they are researching. Additionally, good research is able to withstand questioning and criticisms.

- Research is a process of collecting, analyzing and interpreting information to answer questions. But to qualify as research, the process must have certain characteristics: it must, as far as possible, be systematic, controlled, rigorous, valid and verifiable, empirical and criteria

- 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.

- Research methodology is the specific procedures or techniques used to identify, select, process, and analyze information about a topic. In a research paper, the methodology section allows the reader to critically evaluate a study's overall validity and reliability.

- Research methods help us collect samples, data and find a solution to a problem. ....Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained.

- A good research design should always fulfill the following four conditions; objectivity, reliability, validity and generalizability of the findings.
- Research should contribute important knowledge to the profession – research should have a purpose that is meaningful, not just to get the degree or for personal status. Should not be trivial but instead an important contribution.
- Reflects recognition of guiding interest – serves to provide value to the profession through understanding. This knowledge helps to explain the purpose of the research and to determine how the research should be performed.
- Researcher is knowledgeable about the subject area and other related research – ensures that the researcher understands the subject area and has a deeper understanding of the topic which allows for greater understanding and ability to interpret and critically analyze data.

### **Analysis of Good Research :**

- Researcher is socially responsible and observes ethical norms – researchers are expected to meet ethical standards of the society as they pertain to their subjects, colleagues, employers and society as a whole.
- Responds to challenge – good research stands up to questioning and criticisms of others. A researcher should be able to defend their research and their conclusions
- Conclusions have rational logic and are supported by evidence – conclusions are drawn by the research conducted and there is data to support the claims of the researcher
- Needs clear understanding of symbol systems and open to questioning and revisions – symbols are subjective and the researcher must understand the varying knowledge and interpretations of the people they are researching. Additionally, good research is able to withstand questioning and criticisms.
- Researcher is knowledgeable about the subject area and other related research – ensures that the researcher understands the subject area and has a deeper understanding of the topic which allows for greater understanding and ability to interpret and critically analyze data.
- The purpose of the research should be clearly defined and common concepts be used.

- 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.

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

- 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

- 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

- 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.

- 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.

- 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.

**Books of References:**

- 1. Research methodology Methods and Techniques -C.R.KOTHARI ,GSURAV GARG.**
- 2. Research Methodology - P. Pannerselvam.**
- 3. Research Methodology - Saravanel**

**Questions :**

**2 Marks :**

01. What is Research ?
02. What is mean by Action Research ?
03. What is Research Design ?
04. What is mean by Descriptive Research ?
05. Define Research ?

**5 Marks :**

06. Explain Importance of Research ?
07. Explain Preparation of Research ?
08. What is Research Describe the Main Characteristics of Social Research ?
09. Explain Scope of Research ?

**10 Marks :**

10. What is Research ? Explain Kinds of Research
11. Various Analysis of Qualities of Good Research Work