

**M.Com - RESEARCH METHODOLOGY – MCM34**  
**(2017-2018 – Regulation)**  
**Syllabus**

**UNIT-I : INTRODUCTION**

Research - definition, characteristics, nature and scope. Various types of research - Formulation of research problem - Major steps in Research – Hypothesis - Research Design - Uses of social research.

**UNIT-II : SAMPLING AND DATA COLLECTION**

Sampling: Meaning, definition, need and types. Sampling errors - Merits and demerits of Sampling. Data collection: Sources of data; Primary and Secondary data. Procedure for data collection, Tool of data collection - Questionnaire – Interview-Schedule.

**UNIT-III : DATA PROCESSING AND ANALYSIS**

Processing of data: editing, coding and Tabulation - Problems - use of computer in social research. Analysis of data: Statistical analysis; diagrammatic and graphic representation. Interpretation of results.

**UNIT-IV : STATISTICAL APPLICATIONS**

Factor Analysis - bivariate and Multivariate Analysis. (Practical problems.)

**UNIT-V : RESEARCH REPORTS**

Structure and components - Types of Research Report, Good Research Report. Pictures and Graphs. Introduction to SPSS Package.

**References Books**

1. Wilkinson. T.S. & Bhandarkar. P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, 2000, Mumbai.
2. Panneerselvam. R. Research Methodology, Prentice Hall of India, New Delhi, 2004.
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4. Young, P.V., Scientific Social Survey and Research, Prentice Hall, 1949. New York.
5. Kothari.C.R. Research Methodology - Methods & Technology, New Age International Publisher, New Delhi
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## **Study Material**

### **RESEARCH METHODOLOGY – MCM34**

#### **UNIT- 1**

##### **INTRODUCTION TO RESEACH**

###### **Expected Learning Outcome:**

- 1. To Enable the Students to know role of Research in Business**
- 2. To understand the importance Research Methodology in Decision Making**
- 3. To Introduce the Concept of Scientific Research and the Methods of Conducting Scientific Research**
- 4. To understand the Nature and Scope of Research**
- 5. To Introduce the Significance of Hypothesis**

##### **RESEARCH METHODOLOGY**

###### **Meaning of Research**

In the modern complex world every society today is faced with serious social, economic & political problems. These problems need systematic, intelligent and Practical solutions. Problem solving is technical process. It requires the accumulation of new knowledge. Research provides the means for accumulating knowledge & wisdom.

In other words, research is a systematic effort of gathering analysis & interpretation of problems confronted by humanity. It is a thinking process and scientific method of studying a problem and finding solution. It is an in depth analysis based on reflective thinking.

## Definitions

Research in common parlance refers to a search for knowledge. One can also define research as a scientific and systematic search for pertinent information on a specific topic. Research is an academic activity and the term should be used in a technical sense.

a) William Emory defines Research as **“any organized enquiry designed and carried out to provide information for solving a problem”**

b) The new Oxford English Dictionary defines research is **“the scientific investigation into and study of material, sources etc in order to establish facts and the reach new conclusions”**.

c) Redman and Mory defines, research as **“a systematised effort to gain new knowledge”**.

d) **“A careful investigation or inquiry especially through search for new facts in any branch of knowledge”** Advanced Learner’s Dictionary.

## Characteristics of Research

The above definitions reveal the following characteristics of Research

1. Research is directed towards the solution of a problem.
2. Research is based upon observable experience or empirical evidence.
3. Research demands accurate observation and description.
4. Research involves gathering new data from primary sources or using existing data for a new purpose.
5. Research activities are characterized by carefully designed procedures.
6. Research requires expertise i.e., skill necessary to carryout investigation, search

the related literature and to understand and analyze the data gathered.

7. Research is objective and logical – applying every possible test to validate the data collected and conclusions reached.
8. Research involves the quest for answers to unsolved problems.
9. Research requires courage.
10. Research is characterized by patient and unhurried activity.
11. Research is carefully recorded and reported.
12. A systematic approach must be followed for accurate data. Rules and procedures are an integral part of the process that set the objective. Researchers need to practice ethics and a code of conduct while making observations or drawing conclusions.
13. Research is based on logical reasoning and involves both inductive and deductive methods.
14. The data or knowledge that is derived is in real time from actual observations in natural settings.
15. There is an in-depth analysis of all data collected so that there are no anomalies associated with it.
16. Research creates a path for generating new questions. Existing data helps create more opportunities for research.
17. Research is analytical in nature. It makes use of all the available data so that there is no ambiguity in inference.
18. Accuracy is one of the most important aspects of research. The information that is

obtained should be accurate and true to its nature. For example, laboratories provide a controlled environment to collect data. Accuracy is measured in the instruments used, the calibrations of instruments or tools, and the final result of the experiment.

## **Objectives of Research**

The objectives of Research can be grouped under the following heads

1. To gain familiarity with a phenomenon or to achieve new insights to it.
2. To portray accurately the characteristics of a particular individual situation or a group.
3. To determine the frequency with which something occurs or with which it is associated with something else.
4. To test a hypothesis of a casual relationship between variables.

## **Motivations in Research**

What makes people to undertake research?

The answer is as follows.

1. Desire to get a research degree along with its benefits.
2. Desire to face the challenge in the solving the unsolved Problem.
3. Desire to get intellectual joy of doing some creative work.
4. Desire to be of service to Society.
5. Desire to get respectability.

## **Importance of Research**

“All progress is born of enquiry. Doubt is often better than overconfidence, for it leads to enquiry & enquiry leads to investigation”. Research has an important role to guiding social plan. Knowledge of the society & the cultural behaviour of the people require proper planning for their well development. Because knowledge & cultural behaviour of human being are interdependent. A reliable knowledge is needed for planning & this is possible only through research. Knowledge is a kind of power with which one can face the implication of a particular Phenomenon. Research provides the basis for all govt policies in our economic system. Research helps us in making predictions.

1. A Tool for Building Knowledge and for Facilitating Learning
2. Means to Understand Various Issues and Increase Public Awareness
3. An Aid to Business Success
4. A Way to Prove Lies and to Support Truths
5. Means to Find, Gauge, and Seize Opportunities
6. A Seed to Love Reading, Writing, Analyzing, and Sharing Valuable Information
7. Nourishment and Exercise for the Mind

## **Research is equally important in seeking answer to various social problems**

In addition to this, the significance of research can be understood with the following points.

1. To Professionals in research methodology, research means a source of live hood.
- 2 To Philosophers & thinkers research may mean the outlet for new ideas and insights.
3. To literary man research means the development of new styles & creative work.
4. To the intellectuals research mean the generalisation of new theories.

## **Nature and Scope of Research:**

The Nature of research methodology is the definition of the process of collecting the knowledge required to organise or solve the problem. The Scope is to examine the range of management education in India, its rating process, the viewpoint of faculty, HR executives and students.

**Production Management:** The research performs an important function in product development, diversification, introducing a new product, product improvement, process technologies, choosing a site, new investment etc.

**Personnel Management:** Research works well for job redesign, organization restructuring, development of motivational strategies and organizational development.

**Marketing Management:** Research performs an important part in choice and size of target market, the consumer behavior with regards to attitudes, life style, and influences of the target market. It is the primary tool in determining price policy, selection of channel of distribution and development of sales strategies, product mix, promotional strategies, etc.

**Financial Management:** Research can be useful for portfolio management, distribution of dividend, capital raising, hedging and looking after fluctuations in foreign currency and product cycles.

**Materials Management:** It is utilized in choosing the supplier, making the decisions relevant to make or buy as well as in selecting negotiation strategies.

**General Management:** It contributes greatly in developing the standards, objectives, long-term goals, and growth strategies.

## **Research Method & Research Methodology**

It is necessary to explain the differences between research methods & research methodology. Research methods may be understood as all those methods & techniques that are used for conducting research. Research methods, thus refer to the methods the researcher use in performing the research operations. In other words all those methods which are used by the researcher during the course of his research problem are termed as research methods. 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. Abraham Kaplan defines research methodology in this way. Research methodology is “the description, explanation & Justification of various methods of conducting research”.

Research Methodology has many dimensions and research methods do constitute a part of Research Methodology.

The scope of Research Methodology is wider than that of research methods. “Thus, when we talk of research methodology we not only talk of the research methods but also considered the logic behind the methods we use in the context of our particular method or technique & why we are not using others. So that research results are capable of being evaluated either by the researcher himself or by others” Why a research study has been undertaken how the research problem has been defined in what way & why the hypothesis has been formulated, what data have been adopted etc ate usually answered when we talk of Research Methodology.

### **Scientific Method of Research - Research is a scientific endeavor**

“The Scientific Method is a systematic step-by-step procedure following the logical process of reasoning”. (Clover Vernon.T) Scientific Method is a means for gaining knowledge of the universe. It is an objective logical & Systematic Method of analysis of a phenomenon, devise permit the accumulation of reliable knowledge. It is a systematized



form of analysis. It is characterized by intellectual attitude. The Scientific Method is based on certain articles of faith they are;

**a) Reliance on evidence**

Truth is established on the basis of evident conclusion is admitted only when it is based on evidence. The answer to a question is not decided by imagination or guess.

**b) Commitment to Objectivity**

Objectivity is the hall mark of Scientific method. Objectivity is the willingness & ability to accept truth with our bias.

**c) Ethical Neutrality**

Science does not pass normal judgment on facts. It does not say that they are good or bad. Science never imposes anything. Science aims at nothing but making true & adequate statements about the object.

**d) Verifiability**

The conclusions arrived by a scientist should be verifiable. He must make known to others how he reached at his conclusion. Such verifications help in further research.

**e) Logical Reasoning Process**

The Scientific Method involves the logical process of reasoning.

- a) The reasoning process is used for drawing inference from the finding of a study or for arriving at a conclusion.
- b) The Research Process Selection & Formulation of a problem
- c) Analysis &
- d) Interpretation of Date

- e) Generalisation
- f) Formulation Research
- g) Design
- h) Formulation hypothesis
- i) Collection of data

The Research Process is the Paradigm of research project. In a research project there are various scientific activities. The research process is a system of interrelated activities. Usually research begins with the selection of a problem. The various stages in the research process are explained in the above diagram. Research is a cyclical process. If the Data do not support the hypothesis, research is repeated again.

### **Qualities of Good Research Worker**

The success of any Research to a great extent depends on the qualities of the Researcher.

The qualities are twofold.

1. General Qualities
2. Particular Qualities

#### **1. General Qualities**

##### **a) Scientific attitude**

The 1st essential quality of a successful research worker is that he must possess a scientific frame of mind. Human beings have certain prejudices but a researcher should not be guided by this. He must develop a spirit of science in his mind.

**b) Imagination & insight** The researcher must possess a high degree of imagination. He should be able to go deeper & deeper into the area of social phenomena & visualise the intangible aspects of society.

**c) Perseverance**

The work of scientific Research requires unlimited patience. He should not get easily discouraged. He may often face serious difficulties. But he must develop courage to face the difficulties & work patiently.

**d) Quick Grasping Power**

The Researcher should possess the power to grasp the significance of things quickly.

**e) Clarity of thinking**

A good Researcher should have clear idea about terminology that he is going to use.

**Specific Qualities**

**a) Knowledge of the Subject**

The researcher should be an expert in the study of the subject which he is going to research. Hence he should read all texts on the matter & form of clear-cut idea about the subject under study.

**b) Knowledge of the Research Technique**

The Research worker should also possess an ultimate knowledge of the techniques he applies in solving the problem.

**c) Personal Taste**

A Personal taste in the study will inspire him & keep his morale high in times of difficulties.

#### **d) Unbiased Attitude**

The Researcher should have no pre conception about the subject under study. He should maintain an open mind.

#### **Factors Which Hinder Research**

1. Tradition in the community is a powerful retarding influence
2. Lack of time, energy & resources.
3. Research is considered to the business of a few armchair academicians. Problems faced by Researchers in India

Researchers in India particularly those engaged in research in Social Science face the Following problems.

1. The lack of scientific training in the methodology of research.
2. There is insufficient interaction between the University Research Department and Business establishments & govt. departments.
3. In the fear of misuse govt. is not willing to supply basic documents.
4. There does not exist a code of conduct for researchers.
5. Another difficulty is insufficient secretarial assistance
6. Library management is not satisfactory in many places.
7. Lack of time and money

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## **TYPE OF RESEARCH**

**1. Basic research:** A basic research definition is data collected to enhance knowledge. The main motivation is knowledge expansion. It is a non-commercial research that doesn't facilitate in creating or inventing anything. For example: an experiment to determine a simple fact.

- a) Also called as the fundamental or the theoretical research.
- b) Basic and original.
- c) Can lead to the discovery of a new theory.
- d) Can result in the development or refinement of a theory that already exists.

- e) Helps in getting knowledge without thinking formally of implementing it in practice based on the honesty, love and integrity of the researcher for discovering the truth.

**2. Applied research:** Applied research focuses on analyzing and solving real-life problems. This type refers to the study that helps solve practical problems using scientific methods. Studies play an important role in solving issues that impact the overall well-being of humans. For example: finding a specific cure for a disease.

- i. Based on the concept of the pure research.
- ii. Is problem oriented
- iii. Helps in finding results or solutions for real life problems.
- iv. Provides evidence of usefulness to society.
- v. Helps in testing empirical content of a theory.
- vi. Utilizes and helps in developing the techniques that can be used for basic research.
- vii. Helps in testing the validity of a theory but under some conditions.
- viii. Provides data that can lead to the acceleration of the process of generalization.

**3. Problem oriented research:** As the name suggests, problem-oriented research is conducted to understand the exact nature of a problem to find out relevant solutions. The term “problem” refers to multiple choices or issues when analyzing a situation.

For example, revenue of a car company has decreased by 12% in the last year. The following could be the probable causes: there is no optimum production, poor quality of a product, no advertising, or economic conditions.

**4. Problem solving research:** This type of research is conducted by companies to understand and resolve their own problems. The problem-solving method uses applied research to find solutions to the existing problems.

**5. Qualitative research:** Qualitative research is a process that is about inquiry. It helps create in-depth understanding of problems or issues in their natural settings. This is a non-statistical method.

Qualitative research is heavily dependent on the experience of the researchers and the questions used to probe the sample. The sample size is usually restricted to 6-10 people. Open-ended questions are asked in a manner that encourages answers that lead to another question or group of questions. The purpose of asking open-ended questions is to gather as much information as possible from the sample.

#### **6. Exploratory research**

- A) Involves exploring a general aspect.
- B) Includes studying of a problem, about which nothing or a very little is known.
- C) Follows a very formal approach of research.
- D) Helps in exploring new ideas.
- E) Helps in gathering information to study a specific problem very minutely.
- F) Helps in knowing the feasibility in attempting a study.

#### **7. Descriptive research**

- A) Simplest form of research.
- B) More specific in nature and working than exploratory research.
- C) It involves a mutual effort.

- D) Helps in identifying various features of a problem.
- E) Restricted to the problems that are describable and not arguable and the problems in which valid standards can be developed for standards.
- F) Existing theories can be easily put under test by empirical observations.
- G) Underlines factors that may lead to experimental research.
- H) It consumes a lot of time.
- I) It is not directed by hypothesis.

### **8. Diagnostic study**

- A) Quite similar to the descriptive research.
- B) Identifies the causes of the problems and then solutions for these problems.
- C) Related to causal relations.
- D) It is directed by hypothesis.
- E) Can be done only where knowledge is advanced.

### **Evaluation study**

- A) Form of applied research.
- B) Studies the development project.
- C) Gives access to social or economical programmes.
- D) Studies the quality and also the quantity of an activity.

### **8. Action research**

- A) Type of evaluation study.



B) Is a concurrent evaluation study.

## **9. Conceptual vs Empirical Research**

Conceptual Research is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones.

Empirical Research is a data based research which depends on experience or observation alone. It is aimed at coming up with conclusions without due regard for system and theory.

**One-time Research** – Research confined to a single time period.

**Longitudinal Research** – Research carried on over several time periods.

**Diagnostic Research** – It is also called clinical research which aims at identifying the causes of a problem, frequency with which it occur and the possible solutions for it.

**Exploratory Research** – It is the preliminary study of an unfamiliar problem, about which the researcher has little or no knowledge. It is aimed to gain familiarity with the problem, to generate new ideas or to make a precise formulation of the problem. Hence it is also known as formulative research.

## **THE RESEARCH PROCESS / STEPS**

C.R. Kothari in his book, “Research Methodology: Methods & Techniques” presents a brief overview of a research process. He has given the following order concerning the Research Process.

1. Formulation the Research problem
2. Extensive Literature survey
3. Developing the hypothesis

4. Preparing the research design
5. Determining sample design
6. Collection of Data
7. Execution of the Project
8. Analysis of Data
9. Hypothesis testing
10. Generalisation & Interpretation
11. Preparation of the report.

Research process refers to various decision stages involved in a research project and the relationship between those stages. A researcher has to proceed systematically in the already planned directions with the help of number of steps in sequence.

### **Steps in the Research Design Process**

The steps in the design process interact and often occur simultaneously. For example, the design of a measurement instrument is influenced by the type of analysis that will be conducted. However, the type of analysis is also influenced by the specific characteristics of the measurement instrument.

#### **Step 1: Define the Research Problem**

Problem definition is the most critical part of the research process. Research problem definition involves specifying the information needed by management. Unless the problem is properly defined, the information produced by the research process is unlikely to have any value. Coca-Cola Company researchers utilized a very sound research design to collect information on taste preferences. Unfortunately for Coca-Cola, taste preferences are only part of what drives the soft drink purchase decision.

### **Research problem definition involves four interrelated steps:**

- (1) Management problem / opportunity clarification,
- (2) Situation analysis,
- (3) Model development, and
- (4) Specification of information requirements.

The basis goal of problem clarification is to ensure that the decision maker's initial description of the management decision is accurate and reflects the appropriate area of concern for research. If the wrong management problem is translated into a research problem, the probability of providing management with useful information is low.

### **Situation Analysis**

The situation analysis focuses on the variables that have produced the stated management problem or opportunity. The factors that have led to the problem/opportunity manifestations and the factors that have led to management's concern should be isolated.

A situation analysis of the retail trade outflow problem revealed, among other things, that (1) the local population had grown 25 percent over the previous five years, (2) buying power per capita appeared to be growing at the national rate of 3 percent a year, and (3) local retail sales of nongrocery items had increased approximately 20 percent over the past five years. Thus, the local retailers sales are clearly not keeping pace with the potential in the area.

**Step 2: Extensive literature survey:** Once the problem is formulated, a brief summary of it should be written down. It is compulsory for a research worker writing 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 juncture the researcher should undertake extensive literature survey connected with the problem. For this purpose, the abstracting

and indexing journals and published or unpublished bibliographies are the first place to go to. Academic journals, conference proceedings, government reports, books etc., must be tapped depending on the nature of the problem. In this process, it should be remembered that one source will lead to another. The earlier studies, if any, which are similar to the study in hand should be carefully studied. A good library will be a great help to the researcher at this stage.

**Step 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. As such the manner in which research hypotheses are developed is particularly important since they provide the focal point for research. They also affect the manner in which tests must be conducted in the analysis of data and indirectly the quality of data which is required for the analysis. In most types of research, the development of working hypothesis plays an important role. 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 research and to keep him on the right track. It sharpens his thinking and focuses attention on the more important facets of the problem. It also indicates the type of data required and the type of methods of data analysis to be used

**Step 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. In other words, the function of research design is to provide for the collection of relevant evidence with minimal expenditure of effort, time and money. But how all 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. But when the purpose happens to be an accurate description of a situation or of an association between variables, the suitable design will be one that minimises bias and maximises the reliability of the data collected and analysed.

**Step 5 Determining sample design:** All the items under consideration in any field of inquiry constitute a ‘universe’ or ‘population’. A complete enumeration of all the items in the ‘population’ is known as a census inquiry. It can be presumed that in such an inquiry when all the items are covered no element of chance is left and highest accuracy is obtained. But in practice this may not be true. Even the slightest element of bias in such an inquiry will get larger and larger as the number of observations increases. Moreover, there is no way of checking the element of bias or its extent except through a resurvey or use of sample checks. Besides, this type of inquiry involves a great deal of time, money and energy. Not only this, census inquiry is not possible in practice under many circumstances. 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 purposes. The items so selected constitute what is technically called a sample.

**Step 6 Collecting the data:** In dealing with any real life problem it is often found that data at hand are inadequate, and hence, it becomes necessary to collect data that are appropriate. 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. Primary data can be collected either through experiment or through survey. If

the researcher conducts an experiment, he observes some quantitative measurements, or the data, with the help of which he examines the truth contained in his hypothesis.

**Step 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. If the survey is to be conducted by means of structured questionnaires, data can be readily machine-processed. In such a situation, questions as well as the possible answers may be coded. If the data are to be collected through interviewers, arrangements should be made for proper selection and training of the interviewers. The training may be given with the help of instruction manuals which explain clearly the job of the interviewers at each step. Occasional field checks should be made to ensure that the interviewers are doing their assigned job sincerely and efficiently. A careful watch should be kept for unanticipated factors in order to keep the survey as much realistic as possible.

**Step 8. Analysis of data:** After the data have been collected, the researcher turns to the task of analysing 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. The unwieldy data should necessarily be condensed into a few manageable groups and tables for further analysis.

**Step 9. Hypothesis-testing:** After analysing the data as stated above, the researcher is in a position to test the hypotheses, if any, he had formulated earlier. Do the facts support the hypotheses or they happen to be contrary? 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. 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. If the researcher had no hypotheses to start with, generalisations established on the basis of data may be stated as hypotheses to be tested by subsequent researches in times to come.

**Step 10. Generalisations and interpretation:** If a hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalisation, i.e., to build a theory. As a matter of fact, the real value of research lies in its ability to arrive at certain generalisations. 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.

**Step 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:

### **Primary Measurement Techniques**

**Questionnaire** – a formalized instrument for asking information directly from a respondent concerning behavior, demographic characteristics, level of knowledge, and/or attitudes, beliefs, and feelings.

**Attitude Scales** – a formalized instrument for eliciting self-reports of beliefs and feelings concerning an object(s).

**A. Rating Scales** – require the respondent to place the object being rated at some point along a numerically valued continuum or in one of a numerically ordered series of categories.

**B. Composite Scales** – require the respondents to express a degree of belief concerning various attributes of the object such that the attitude can be inferred from the pattern of responses.

**C. Perceptual maps** – derive the components or characteristics an individual uses in comparing similar objects and provide a score for each object on each characteristic.

**D. Conjoint analysis** – derive the value an individual assigns to various attributes of a product.

**Observation** – the direct examination of behavior, the results of behavior, or physiological changes.

**Projective Techniques and Depth Interview** – designed to gather information that respondents are either unable or unwilling to provide in response to direct questioning.

**Projective Techniques** – allow respondents to project or express their own feelings as a characteristic of someone or something else.

**Depth Interviews** – allow individuals to express themselves without any fear of disapproval, dispute, or advice from the interviewer.

## **HYPOTHESIS**

Hypothesis is an assumption that is made on the basis of some evidence. This is the initial point of any investigation that translates the research questions into a prediction. It includes components like variables, population and the relation between the variables. A research hypothesis is a hypothesis that is used to test the relationship between two or more variables.

### **Characteristics of Hypothesis**

Following are the characteristics of hypothesis:

- The hypothesis should be clear and precise to consider it to be reliable.
- If the hypothesis is a relational hypothesis, then it should be stating the relationship between variables.



- The hypothesis must be specific and should have scope for conducting more tests.
- The way of explanation of the hypothesis must be very simple and it should also be understood that the simplicity of the hypothesis is not related to its significance.

### **Sources of Hypothesis**

Following are the sources of hypothesis:

- The resemblance between the phenomenon.
- Observations from past studies, present-day experiences and from the competitors.
- Scientific theories.
- General patterns that influence the thinking process of people.

### **Types of Hypothesis**

There are six forms of hypothesis and they are:

- Simple hypothesis
- Complex hypothesis
- Directional hypothesis
- Non-directional hypothesis
- Null hypothesis
- Associative and casual hypothesis

### **Simple Hypothesis**

It shows a relationship between one dependent variable and a single independent variable. For example – If you eat more vegetables, you will lose weight faster. Here, eating more vegetables is an independent variable, while losing weight is the dependent variable.

## **Complex Hypothesis**

It shows the relationship between two or more dependent variables and two or more independent variables. Eating more vegetables and fruits leads to weight loss, glowing skin, reduces the risk of many diseases such as heart disease, high blood pressure and some cancers.

## **Directional Hypothesis**

It shows how a researcher is intellectual and committed to a particular outcome. The relationship between the variables can also predict its nature. For example- children aged four years eating proper food over a five-year period are having higher IQ levels than children not having a proper meal. This shows the effect and direction of effect.

## **Non-directional Hypothesis**

It is used when there is no theory involved. It is a statement that a relationship exists between two variables, without predicting the exact nature (direction) of the relationship.

## **Null Hypothesis**

It provides the statement which is contrary to the hypothesis. It's a negative statement, and there is no relationship between independent and dependent variables. The symbol is denoted by "H<sub>0</sub>".

## **Associative and Causal Hypothesis**

Associative hypothesis occurs when there is a change in one variable resulting in a change in the other variable. Whereas, causal hypothesis proposes a cause and effect interaction between two or more variables.

## **Examples of Hypothesis**

Following are the examples of hypothesis based on their types:

- Consumption of sugary drinks every day leads to obesity is an example of a simple hypothesis.
- All lilies have the same number of petals is an example of a null hypothesis.
- If a person gets 7 hours of sleep, then he will feel less fatigue than if he sleeps less.

## **Functions of Hypothesis**

Following are the functions performed by the hypothesis:

- Hypothesis helps in making an observation and experiments possible.
- It becomes the start point for the investigation.
- Hypothesis helps in verifying the observations.
- It helps in directing the inquiries in the right directions.

## **How will Hypothesis help in Scientific Method?**

Researchers use hypothesis to put down their thoughts directing how the experiment would take place. Following are the steps that are involved in the scientific method:

- Formation of question
- Doing background research
- Creation of hypothesis
- Designing an experiment
- Collection of data
- Result analysis
- Summarizing the experiment

- Communicating the results

### **Developing a hypothesis from a research question**

Our definition of a hypothesis stresses that it can be tested. To meet this criterion the hypothesis must be operationalised - that is the concepts employed in the hypothesis must be measurable.

Developing hypotheses requires that you identify one character, variable or descriptor of a sampling unit that causes, affects, or has an influence on, another character, variable or descriptor of the same or other sampling units. The character, variable or descriptor that affects other variables or sampling units is called the independent variable. The character, variable or descriptor which is affected by the independent variable is called the dependent variable or response variable.

Note that although for the purposes of research methodology some variables may be called 'dependent' when investigating their relationship with other 'independent' variables, this does not imply the existence of a causal (as compared with associative) relationship unless strict rules of research design are followed. This issue is discussed in more detail later in the module.

### **Good hypotheses**

There are two criteria for good hypotheses. One, hypotheses are statements about relationships between variables. Two, hypotheses carry clear implications for testing the stated relationships. These criteria mean, then, that hypothesis statements contain two or more variables that are measurable or potentially measurable and that they specify how the variables are related.

**In order to form a hypothesis, you should take these steps:**

- a) Collect as many observations about a topic or problem as you can.
- b) Evaluate these observations and look for possible causes of the problem.
- c) Create a list of possible explanations that you might want to explore.

After you have developed some possible hypotheses, think of ways that you could confirm or disprove each hypothesis through experimentation. This is known as falsifiability-. What falsifiability means is that if something was false, then it is possible to demonstrate that it is false.

**Research without hypotheses**

In exploratory research our base knowledge of a subject may be so low that we cannot formulate meaningful hypotheses. Nonetheless, exploratory research should be guided by a clear sense of purpose. Instead of hypotheses, the design for the exploratory study should state its purpose, or research objectives as well as criteria by which the exploration will be judged successful.

For example, if we are trying to encourage farmers to make use of compost, we may first need to know the social structure or social norms of the farming community before we can begin making meaningful hypotheses about which individuals will influence the decision and the factors they consider when making their decision. We can state that our exploratory study would have the purpose of generating hypotheses about personal characteristics which correlate with the adoption/rejection of composting, the composition of the decision-making unit, and the factors which influence the decision either to adopt or reject. Success would be measured in terms of generating testable hypotheses.

Interpretative research, which seeks to develop knowledge through understanding meaning, does not usually proceed with hypotheses.

## **RESEARCH DESIGN**

At the beginning of every meaningful research, a researcher chooses a framework of methods and techniques to be used and applied in the research process. This framework is usually referred to as the research design.

It allows the researchers to decide on the research methodology that is suitable for the topic of their study and to properly set up their research. Research design also supports the specific type of research (experiment, survey, review, case study, correlation, and so on) that needs to be done.

### **Key elements of research design:**

As all research design types have certain common characteristics, here are the top elements every good design should have or at least touch upon.

1. Purpose statement
2. Techniques for data collection
3. Methods for research analysis
4. Type of research methodology
5. Probable objections to conducting research
6. Research study settings
7. Timeline
8. Analysis measurement

Of course, the exact elements depend on the type of research design you opt for. So, here's a preview of the most common research design types.

## **Essential characteristics of good research design**

Any type of research design is valid only if its results are reliable. Nevertheless, a lot of companies nowadays make vital decisions based on unreliable research. In many cases, this is because they fail to account for various types of bias in research. To get accurate data from your research, you need to do everything in your power to protect your research results against bias and achieve utmost neutrality.

Also, the outcome of your research should be applicable to an entire population and not just a limited sample. To ensure that's the case, make sure you got your sampling right and take into account the potential margin of error just to be on the safe side.

## **5 most common research design types**

There are numerous ways to classify research design. Based on the purpose and method, we could distinguish among 5 research design types:

### **1. Descriptive research design**

This is a theory-based design, where the researcher is primarily interested in describing the topic that is the subject of the research. It is applied to case studies, naturalistic observations, surveys, and so on.

This method includes data collection, analysis, and presentation. It lets the researcher clearly present the problem statement in order to allow others to better understand the need for this kind of research. Without a clear problem statement, you're not doing descriptive but exploratory research.

### **2. Correlational research design**

Just as its name suggests, correlational design allows the researcher to establish some kind of a relation between two closely related topics or variables. It's a non-experimental research design type that requires at least two groups of data.

It can be applied to case-control studies and observational studies, for example.

### **3. Experimental research design**

Whether it is a field experiment, a controlled experiment, or a quasi-experiment, this is one of the research design types that establishes a relation between the cause and effect of a particular happening.

Here, the researcher observes the influence of an independent variable on the dependent one. For instance, you can observe the impact of the price (an independent variable) on customer satisfaction (a dependent variable).

Usually, this type of research design contributes to solving a particular problem by manipulating the independent variables to observe the change they have on the dependent one. For example, you can experiment with changing the price and observe the effect it has on customer satisfaction.

### **4. Diagnostic research design**

Diagnostic research is one of the research design types that aims to examine the underlying cause of a certain situation or phenomenon. It can help you find out more about the factors that lead to specific issues or challenges your customers might be facing.

This design usually consists of three research phases –

- (1) Problem inception,
- (2) Problem diagnosis, and
- (3) Problem solution.



## **5. Explanatory research design**

Again, the name is self-explanatory. Explanatory research design is used to further expand, explore, and explain the researcher's ideas and theories. This type of research design is used to elaborate on the unexplored aspects of a particular topic and try to explain the missing pieces.

### **Quantitative vs. Qualitative Research design**

#### **Quantitative research design**

Quantitative research aims to give answers to questions like who, what, when, where, and how many?

Due to the fact that they use close-ended questions, the results of quantitative surveys can easily be transformed into numbers, stats, graphs, and charts. This is why businesses often use quantitative surveys to learn about their customers and drive their decisions using the data obtained.

#### **Qualitative research design**

Qualitative research, on the other hand, aims to give answers to why and how something is happening.

Qualitative research most commonly revolves around open-ended survey questions and highly descriptive answers that are hard to quantify and express through numbers. It's a great way to collect more complex information and explore people's thoughts and behavior.

It's often used to find ideas, formulate predictions, and explain the numbers.

If you're looking to learn more about these two types of design, we have prepared a guide to help decide whether you should collect quantitative or qualitative data for your business research.

### **Fixed vs. flexible research design**

Another distinction can be made between fixed and flexible research design. Often, these two research design types coincide with quantitative (fixed design) and qualitative (flexible design) data collection.

With a fixed research design, the design of the research is pre-determined and known even before you start collecting data. Flexible designs, on the other hand, allow for more freedom when collecting data – for example, you don't offer predetermined answer options, so the respondents have to type in their own answers.

### **Research design types by grouping**

Yet another classification of research design types can be made based on the way participants are grouped. In most cases, grouping depends on the research hypothesis and the way participants are being sampled.

For example, In a typical study based on experimental research design, there's usually at least one experimental and one control group. In medical studies, let's say, one group could be receiving treatment, while the other would be given no treatment. You get the idea.

Based on participant grouping, we can distinguish among 4 types of research design:

#### **Cohort study**

A cohort study is a type of longitudinal research that samples a cohort (a group of people with a shared characteristic) while doing a cross-section at specific time intervals. It is a type of panel study where the individuals in the panel share a common characteristic.

### **Cross-sectional study**

A cross-sectional study is common in social science, medical research, and biology. This type of research design analyzes data either from a population, or from a representative sample, at a specified point in time.

### **Longitudinal study**

A longitudinal study is a research design that involves repeated observations of the same variables over short or long periods of time. It is often a type of observational study, although they can also be structured as longitudinal randomized experiments.

### **Cross-sequential study**

Cross-sequential research design combines longitudinal and cross-sectional research design, aiming to compensate for some of the issues inherently present in the two aforementioned designs.

## **SOCIAL RESEARCH**

Sciences are broadly divided into physical sciences & social sciences. Social sciences include various disciplines dealing with human nature, human life, human behaviour, social groups & Social institutions. Example Anthropology, Commerce, Economics, Geography, History, Law, Political science, Psychology, Sociology etc. All these branches are separate but are interdependent.

Social Science Research is a systematic method of exploring analysing & conceptualizing human life in order to extend, correct or verify the knowledge of human behaviour & social life. Social Research, “Seeks to find explanations to unexplained social phenomena, to clarify the doubtful & correct the misconceived facts social life”- Pauline. V. Young.

### **Objectives of Social Research**

- a) The aim of Social Research is to discover new facts or verify and test old facts.
- b) It tries to understand the human behaviour & its interaction with the environment & Social institutions.
- c) It tries to find out causal connection between human activities and natural laws governing them.
- d) Another purpose of Social Science Research is to develop new tools and techniques in social science.

### **Uses of Social Research**

1. **Discovery of facts & their interpretations** - Research provides answer to questions of what, where, when & how of man, social life and institutions. There are half truths pseudotruths and superstitions. Discovery of facts enlightens us.
2. **Diagnosis of problems**- The developing countries face so many problems such as poverty unemployment, Social tensions, low productivity etc. Social Science Research helps to discover solution to these problems.
3. **Systematization of knowledge**- The facts discovered through research are part & parcel of the body of knowledge.
4. **Prediction**- Social Science Research aims at predicting social events.
5. **Planning** – Planning is needed for socio-economic development & Social Science Research provides sufficient data for planning.
6. **Social Welfare**- Social Science Research unfolds & identifies the causes of social evils & problems.

## Good Research

James Harold Fox in “criteria of good research” says that scientific research should satisfy the following conditions.

- a) The purpose of Research should be clearly defined and common concepts should be used
- b) 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 been attained.
- c) The design of the Research should be carefully planned to yield results that are as objective as possible.
- d) Research report should be complete and should be frank and without any flaws.
- e) Collection and analysis of data should be adequate and the reliability should be checked carefully.
- f) Conclusions should be justified by data
- g) Researches must be an experienced person with good reputation.
- h) Good Research is systematic
- i) Good Research is logical
- j) Good Research is empirical
- k) Good Research is replicable

### Key Terms to Remember

- **Research:** Research is a careful investigation or inquiry especially through search for new facts in any branch of knowledge.
- **Social research:** Social research is the investigation of the underlying processes operative in the lives of persons who are in association.
- **Research process:** Research process consists of series of actions or steps necessary to effectively carry out research.

### Questions

1. What do you mean by research? Explain its significance in modern times.
2. Distinguish between Research methods and Research methodology.
3. Describe the different types of research, clearly pointing out the difference between an experiment and a survey.
4. Write short notes on:
  - (1) Design of the research project;
  - (2) Ex post facto research;
  - (3) Motivation in research;
  - (4) Objectives of research;
  - (5) Criteria of good research;
  - (6) Research and scientific method.
5. “Empirical research in India in particular creates so many problems for the researchers”. - Explain
6. State the problems that are usually faced by Social Researchers.
7. What do you mean by Research Methodology?
8. Explain its significance and describe compile the different types of research.
9. . Explain the steps in research process with the help of flow chart of the research process.
10. Explain the uses of Social Research

## MCQ – Questions

1. Research is
  - a) Searching again and again
  - b) Finding solution to any problem
  - c) **Working in a scientific way to search for truth of any problem**
  - d) None of the above
  
2. Which of the following is the first step in starting the research process?
  - a) Searching sources of information to locate problem.
  - b) Survey of related literature
  - c) **Identification of problem**
  - d) Searching for solutions to the problem
  
3. A common test in research demands much priority on
  - a) Reliability
  - b) Usability
  - c) Objectivity
  - d) **All of the above**
  
4. Action research means
  - a) A longitudinal research
  - b) An applied research
  - c) **A research initiated to solve an immediate problem**
  - d) A research with socioeconomic objective
  
5. A reasoning where we start with certain particular statements and conclude with a universal statement is called
  - a) Deductive Reasoning
  - b) **Inductive Reasoning**
  - c) Abnormal Reasoning
  - d) Transcendental Reasoning
  
6. When planning to do social research, it is better to:
  - a) Approach the topic with an open mind
  - b) Do a pilot study before getting stuck into it

- c) **Be familiar with the literature on the topic**
  - d) Forget about theory because this is a very practical undertaking can't have one without the other
7. We review the relevant literature to know:
- a) What is already known about the topic
  - b) What concepts and theories have been applied to the topic
  - c) Who are the key contributors to the topic
  - d) **All of the above**
8. A deductive theory is one that:
- a) Allows theory to emerge out of the data
  - b) **Involves testing an explicitly defined hypothesis**
  - c) Allows for findings to feed back into the stock of knowledge
  - d) Uses qualitative methods whenever possible
9. What is one of the main disadvantages of using the covert role in ethnography?
- a) It can be hard to gain access to the social group
  - b) **It is difficult to take notes without arousing suspicion**
  - c) The problem of reactivity: people may change their behaviour if they know they are being observed
  - d) It is usually too time consuming and expensive to be a realistic option
10. What is a key informant?
- a) **A group member who helps the ethnographer gain access to relevant people/events**
  - b) A senior level member of the organisation who refuses to allow researchers into it
  - c) A participant who appears to be helpful but then blows the researcher's cover
  - d) Someone who cuts keys to help the ethnographer gain access to a building