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UNIVERSITY OF JAMMU
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**SELF LEARNING MATERIAL
M.A. SOCIOLOGY**

**COURSE TITLE: METHODOLOGY OF SOCIAL
RESEARCH**

SEMESTER – II

**COURSE NO: SOC - C- 201 CREDITS: 6 Unit: I-IV
LESSON No: 1–24**

**Course Coordinator
Prof. Vishav Raksha
Head, Department of
Sociology, University of
Jammu**

**Teacher Incharge
Dr. Neha Vij
Centre for Distance and
Online Education,
University of Jamm**

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SOC-C- 201
METHODOLOGY OF SOCIAL RESEARCH

COURSECONTRIBUTORS

Prof. Vishav Raksha
Professor and Head,
Department of Sociology
University of Jammu

Dr. Hema Gandotra
Associate Professor,
Department of Sociology,
University of Jammu

Reviewing and Proof Reading By:
Dr. Neha Vij
Assistant Professor, Department of Sociology, CDOE
University of Jammu

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**Syllabus of Sociology M.A. 2nd Semester for the examination to be held in the year
May 2026, 2027 and 2028 (NON-CBCS for CDOE)**

Course No: SOC-C-201

Title: Methodology of Social Research

Credits: 6

Maximum Marks: 100

**Duration of examination: 3
hours.**

a) Semester Examination (External): 70

b) Session Assessment (Internal): 30

Objective: The course intends to familiarize the students with the Methodology, Scientific Methods & Tools in Social Research. The main focus of this course is to acquaint the students with the qualitative and quantitative survey research techniques. It further helps to train the students of Sociology in Basic methods which are applicable in sociological problems and data analysis.

Unit-I Scientific Method in Social Research

Methodology, Methods, Techniques-Conceptual Clarification, Theory Building, Objectivity/Value Neutrality, Hypothesis, Facts & Values.

Unit-II Quantitative Methods & Survey Research

Survey Techniques, Research Designs, Sampling, Questionnaire, Schedule, Interview, Scaling.

Unit-III Qualitative Research Techniques

Observation, Case Study method, Content Analysis, Life History (Genealogy). Validity and Reliability in Qualitative Research.

Unit-IV Data Analysis

Coding, Editing & Tabulation, Interpretation & Drawing Inferences, Bibliography and Report Writing.

NOTE FOR PAPER SETTING:

A. Session Assessment Internal (30 marks)

There will be three Internal Assessment Assignments carrying the total weightage of 30 marks.

IAA1. Long Answer Type Questions (10X1=10 Marks)

Long answer type question (of maximum 1200 words) of 10 marks (one to be attempted, out of two, each from unit I and II).

IAA2. Short Answer Type Questions (5X2=10 Marks)

Two short answer type questions (of about 600 words), each of 5 marks. These shall be taken from units III and IV.

IAA3. Very Short Answer Type Questions (2.5X4=10 Marks)

Four very short answer type questions (of about 250 words), each of 2.5 marks. These shall be taken from all the four units.

B. Semester Examination External (70 marks)

The question paper will consist of two sections A and B.

Section A will consist of eight long answer-type questions, two questions from each unit. The candidate will be required to answer four questions, selecting one from each unit. Each question will carry 13 marks (**13 X 4=52 marks**).

Section B will consist of eight short answer-type questions, two questions from each unit. The candidate will be required to answer four questions, selecting one from each unit. Each question will carry 4.5 marks (**4.5 X 4=18 marks**).

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METHODOLOGY

STRUCTURE

- 1.0 Learning Objectives**
- 1.1 Introduction**
- 1.2 Meaning of Methodology**
 - 1.2.1 Research Methodology**
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- 1.13 Answers to Check Your Progress**
- 1.14 Suggested Readings**

1.0 LEARNING OBJECTIVES

Dear learner, this lesson introduces you to the meaning of research. It provides you with the knowledge of research process. After going through this lesson, you will be able to:

- **Understand the meaning of research**
- **Explain the research process**
- **Know the difference between research method & research methodology**
- **Understand the meaning of research and research methodology**

1.1 INTRODUCTION

This chapter deals with explaining the methodology of social science research and philosophical background of research. 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. The researcher needs to know how to develop certain induces or tests, how to perform statistical operations such as averages, standard deviation, inferential statistics like chi-square or which research technique to apply, but also to know which techniques are relevant and then what would they mean. The scope of research methodology is wider than of research methods.

1.2 MEANING OF METHODOLOGY

It is a set of methods, principles and rules for regulating a given discipline. Unlike method (which systematically details a given procedure or process) does not describe specific methods. Methodology refers to the rationale and / or the philosophical assumptions that underlie a particular study or a particular methodology. Research methodology refers to a philosophical background of research.

1.2.1 RESEARCH METHODOLOGY

It is a science of studying how research is done scientifically. It is a way to systematically solve the research problem by logically adopting various steps. Methodology helps to understand not only the products of scientific inquiry but the process itself. It aims to describe and analyze methods, throw light on their limitations and resources, clarify their presupposition and consequences, relating their potentialities to the twilight zone at the frontier of knowledge.

During the 19th century philosophers and other advocated the scientific study of human society. It was during that time many thinkers developed theories about society, followed later by methodologies for testing theories and developing new ones.

Theory and methodology go hand in hand when studying pattern of life in human society. The 19th century French Philosopher August Comte was an important early figure in the development of social science theories. He believed that society could be studied scientifically and objectively at a time

when most societal changes were explained in religious terms.

1.3 PHILOSOPHY BEHIND METHODOLOGY: HISTORICAL PERSPECTIVE

When most people think about science, they visualize laboratory and chemicals. They think of science as bring, cut and dry and then think of scientist as narrow of this world of reality ‘a nerd’. A lot of our stereotypes about science came from a particular period when science was dominated by positivism. Positivism in its broadest sense is a rejection of metaphysics. It holds that the goal of knowledge is simply to describe the phenomenon that we experience. The process of science is to stick to what we can observe or measure. They minded and out believed that anything that cannot be measured is not science. Science was seen as the way to get to the truth well enough to predict or control it. The positivists believed in empiricism. The key approach to scientific method is experiments; attempt to discern natural laws through direct manipulation and observation.

Things changed in middle part of the 20th century, with a shift to post positivism. Post positivism might begin by recognizing that the way scientists think and work and the way we think in our everyday life are not distinctly different. Post positivist re- cognizes that all observation is fallible and has error and that all theory is reversible. Post positivist emphasizes the importance of multiple measurement and observation, the need to use ‘triangulation’. Most post positivist are constructivists who believe that each person constructs reality from own perspective. They believe that the best approach to objectivity is ‘triangulation’ across various perspectives. The scientific methodology is based on this conceptual frame work.

Two schools of science

Approach	Concepts	Methods
<i>Positivism</i>	Social Structure Social facts	Quantitative Hypothesis testing
<i>Interpretive Science</i>	Social Construction Meanings	Quantitative Hypothesis generation
(Phenomenological) (Post positivist)		

1.4 BASIC ELEMENTS OF SCIENTIFIC RESEARCH METHODOLOGY

1. **Laws:** Verified hypotheses, used to assets a predictable association among variables, can be empirical or theoretical.
2. **Principles:** It is a law or general truth which provides a guide to thought or action.
3. **Hypotheses:** Formal propositions which, though untested, are amenable to testing usually expressed in casual terms.

- 4. Conjectures:** Informal proposition which are not stated in a testable form, nor is casual relationship known or even necessarily implied.
- 5. Concepts:** Concepts are inventions of the human minded to provide a mean and for organization and understanding observation; they perform
- 6. Construct:** A number of functions, all of which are designed to form logical and systematic relationship among data.
- 7. Facts:** A phenomenon that is true or generally held to be true.
- 8. Data:** The collection of facts achieved either through direct observation or through gaining records; observation is the process by which facts became data.

1.4.1 Research tactics and their philosophical bases:

Research approaches (Quantitative)	Positivistic (Qualitative)	Phenomenological
Action research		Strictly interpretive
Case studies	Have scope to be either	
Ethnographic		Strictly interpretive
Field experiments	Have scope to be either	
Focus groups		Mostly interpretive
Forecasting research	Strictly positivism	
		Some room for Interpretation
Futures research	Have scope to be either	
Game or role playing		Strictly interpretive
In depth survey		Mostly interpretive
Laboratory experiments	Strictly positivism with	
		Some room for Interpretation
Large scale surveys	Strictly positivism with	
		Some room for Interpretation
Participant observation		Strictly interpretive
Scenario research		Mostly interpretive

1.5 RESEARCH APPROACHES

Two basic approaches to research: -

1.2.2 Quantitative approach.

1.2.3 Qualitative approach.

1. **Quantitative Approach:** It involves generation of data in quantitative form, i.e. in numbers, which can be subjected to rigorous quantitative analysis in a formal and rigid manner. This approach can be further subdivided into:
 - i) **Inferential:** To form data base from which to infer characteristics of population.
 - ii) **Experimental:** Having greater control over the research environment and in this case same variables are manipulated to observe effect on some other variables.
 - iii) **Simulation:** It involves construction of an artificial environment within which relevant data can be generated.
2. **Qualitative approach:** - It is research concerned with subjective assessment of attitudes, opinion and behavior.

CHECK YOUR PROGRESS — I

NOTE: - Write your answers in the space given below.

A) Tick the right choice:

a) _____ approach form data base from which to infer characteristics of population.

i) Inferential

ii) Experimental

b) Informal proposition which are not state in a testable form:

i) Principles

ii) Conjectures

B) Answer the following questions

a) Define methodology of research.

b) Define Qualitative approach.

1.6 RESEARCH METHODS VS RESEARCH METHODOLOGY

Research method pertains to all those methods, which a researcher employs to undertake research process, to solve the given problem. The techniques and procedure, that are applied during the course of studying research problem are known as the research method. It encompasses both qualitative and quantitative method of performing research operations, such as survey, case study, interview, questionnaire, observation, etc.

These are the approaches, which help in collecting data and conducting research, in order to achieve specific objectives such as theory testing or development. All the instruments and behavior, used at various levels of the research activity such as making observations, data collection, data processing, drawing inferences, decision making, etc. are included in it. Research methods are put into three categories:

- **First Category:** The methods relating to data collection are covered. Such methods are used when the existing data is not sufficient, to reach the solution.
- **Second Category:** Incorporates the processes of analyzing data, i.e. to identify patterns and establish a relationship between data and unknowns.
- **Third Category:** Comprise of the methods which are used to check the accuracy of the results obtained.

Research methods may be understood as all those methods / techniques that are used for conducting research. All those methods which are used by the researcher during the course of studying his research problem are research methods. These can be grouped as: -

1.2.4 Those concerns with the collection of data.

1.2.5 Statistical techniques which are used for establishing relationship.

1.2.6 Method which is used to evaluate the accuracy of the results obtained. Last two methods are taken as analytic tools.

Research Methodology: Research Methodology, as its name suggest is the study of methods, so as to solve the research problem. It is the science of learning the way research should be performed systematically. It refers to the rigorous analysis of the methods applied in the stream of research, to ensure that the conclusions drawn are valid, reliable and credible too.

The researcher takes an overview of various steps that are chosen by him in understanding the problem at hand, along with the logic behind the methods employed by the researcher during study.

It also clarifies the reason for using a particular method or technique, and not others, so that the results obtained can be assessed either by the researcher himself or any other party.

It is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. The researcher needs to know how to develop certain induces or tests, how to perform statistical operations such as averages, standard deviation, inferential statistics like chi-square or which research technique to apply, but also to know which techniques are relevant and then what would they mean. The scope of research methodology is wider than of research methods.

Method plainly means a particular procedure for accomplishing or approaching something, especially a systematic or established one. Methodology can be understood as a set of specific procedures or techniques used to identify, select, process, and analyze information about a topic. It is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. The most important methodological choice researchers make is based on the distinction between qualitative and quantitative data i.e. whether it would collect descriptive data or a quantifiable data.

When we talk of research methodology, we not only talk of research methods, but also consider the logic behind the methods we use in context of our research study and explain why we are winging a particular method or technique, so that the results are capable of being evaluated by self or others.

DIFFERNCE BETWEEN RESSEARCH AND RESARCH METHODOLOGY

BASIS OF COMPARISON	RESEARCH METHOD	RESEARCH METHODOLOGY
Meaning	Research Method implies the methods employed by the researcher to conduct research.	Research methodology signifies way to efficiently solving research problems.
What is it?	Behavior and instrument used in the selection and construction of the research technique.	Science of understanding, how research is performed methodically.
Encompasses	Carrying out experiment, test, surveys and so on.	Study different techniques which can be utilized in the performance of experiment, test, surveys etc.

BASIS OF COMPARISON	RESEARCH METHOD	RESEARCH METHODOLOGY
Comprise of	Different investigation techniques.	Entire strategy towards achievement of objective.
Objective	To discover solution to research problem.	To apply correct procedures so as to determine solutions.

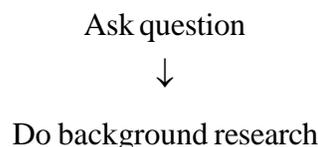
- **KEY DIFFERENCES BETWEEN RESEARCH METHOD AND RESEARCH METHODOLOGY**

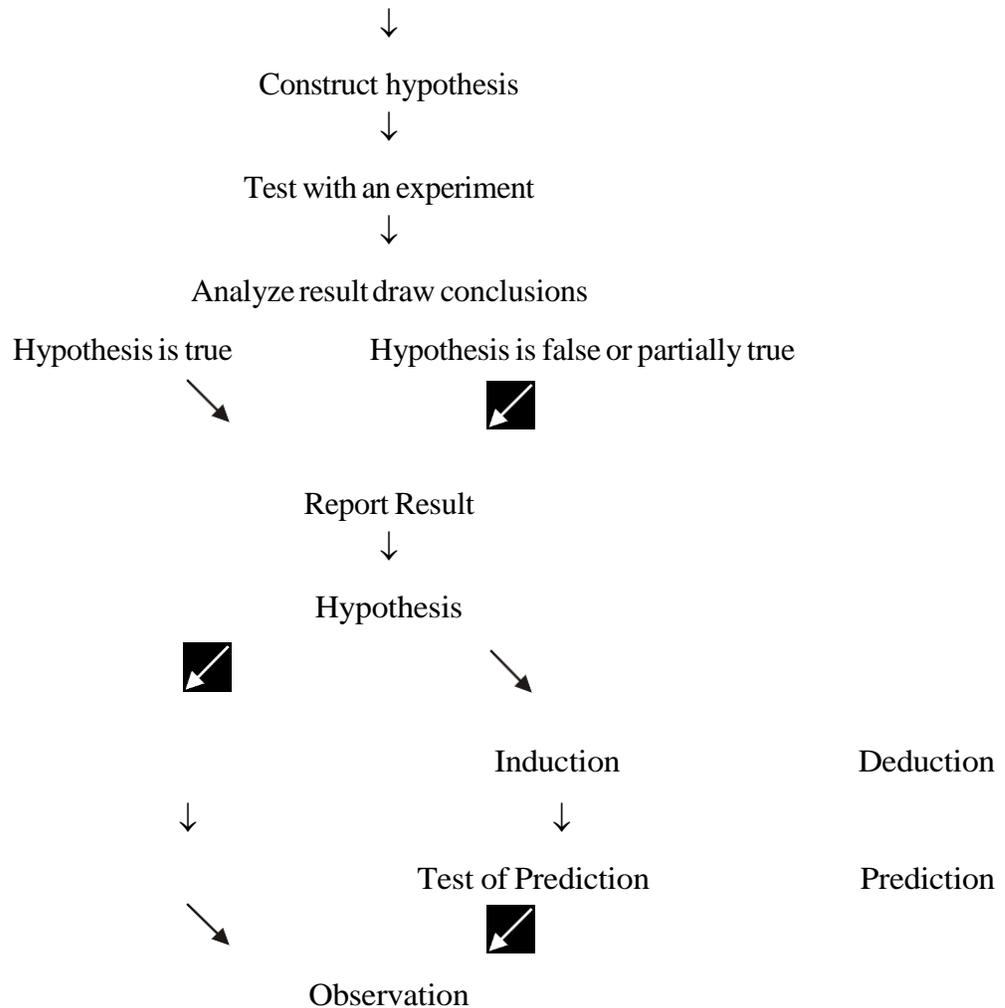
The differences between research method and research methodology can be drawn clearly on the following grounds:

1. The research method is defined as the procedure or technique applied by the researcher to undertake research. On the other hand, research methodology is a system of methods, used scientifically for solving the research problem.
2. The research method is nothing but the behaviour or tool, employed in selecting and building research technique. Conversely, research methodology implies the science of analysing, the manner in which research is conducted appropriately.
3. The research method is concerned with carrying out experiment, test, surveys, interviews, etc. As against this, research methodology is concerned with learning various techniques which can be employed in the performance of experiment, test or survey.
4. Research method covers various investigation techniques. Unlike, research methodology, which consists of complete approach aligned towards the attainment of purpose.
5. Research method intends to discover the solution to the problem at hand. In contrast, research methodology aspires to apply appropriate procedures, with a view to ascertaining solutions.

1.7 RESEARCH PROCESS

The basic research process consists of a series of steps summarized in the flow chart below:





1.8 STEPS IN RESEARCH PROCESS

1.8.1 Formulating a Research Problem

There are two types of research problems: -

- a) Those which relates to states of nature.
- b) Those which relates to relationships between variables. Essential two steps are involved in this problem formation: -
 - a) Understanding the problem thoroughly.
 - b) Rephrasing the same into meaningful terms from an analytical point of view.

To understand the research problem would entails discussions with experts and a lot of literature search which is of two types: -

- A) **Conceptual Literature:** - Those concerning concepts and theories.
 - B) **Empirical Literature:** - Those consisting studies made earlier which are similar to the proposed research. The problem must be defined unambiguously for that will help discriminating relevant data from irrelevant one. Care must be taken to verify the objectivity and validity of the background facts concerning the problem.
2. **Review of Literature:** The researcher should undertake excessive literature survey, connected with the problem. Academic journals, conference proceedings, governmental reports, books, internet sources must be accessed to get an overview of the problem and identify gaps in the previous research. Such a search and study would help in the formulation of research methodology.
 3. **Formulation of hypothesis:** Hypothesis is a tentative assumption made in order to draw out and test its logical or empirical consequences. They provide focal point of research. They clarify the relations to be tested and procedure for doing so. They guide the research by delimiting the area of research and keeping the research goals in view. It arises as a result of a prior thinking about the subject, examination of available data and material, including related studies and the counsel of experts and other interested parties.
 4. **Preparing a research design:** The statement of conceptual structure within which research would be counted. Research purpose may be categorized into four categories:
 - i) Exploration
 - ii) Description
 - iii) Diagnosis
 - iv) Experimentation

There are several research designs experimental and non-experimental - out of which the researcher will select one for its project. It involves the following: -

- Skills of researcher and its staff (if any).
- Explanation of the way in which selected means of obtaining information will be organized.
- Time available for research.

- Financial implications.
 - The means of obtaining the information.
1. **Determining sample design:** - The researcher must decide the way of selecting the sample popularly known as the sample design. Samples can be either probability or non-probability. With probability samples element has a known probability of being included as a sample, which is not possible with non-probability samples.
 2. **Collection of data:** Primary data can be collected either through experiment or survey. If the researcher conducts an experiment, quantitative information is generated which helps to accept or reject the hypothesis. The survey data can be obtained using methods like observation, interview, case study, and questionnaire.
 3. **Analysis of data:** After the data has been collected it is analyzed after coding, usually done to reduce the data to manageable form, editing it to improve its quality and tabulate it into meaningful categories pertinent to the research problem. Statistical analysis is done using appropriate statistical techniques.
 4. **Generalization and interpretation:** After the analysis of data if the hypothesis is tested and upheld several times, it may be possible for the researcher to arrive at generalization and build a theory. If a researcher has no hypothesis in the beginning he may seek to explain his findings on the basis of a theory. This is known as interpretation, which may further nigger another research process.

CHECK YOUR PROGRESS — II

NOTE: - Write your answers in the space given below.

A) Tick the right choice:

a) Those methods / techniques that are used for conducting research refers to

- i) Research Methods ii) Research Methodology.

b) _____ Consisting studies made earlier which are similar to the proposed research.:

- i) Empirical Literature ii) Conceptual Literature

B) Answer the following questions

a) Define Research Methodology.

b) Write few lines about formulation of hypothesis.

1.9 LET US SUM UP

In short, we can say that it is a science of studying how research is done scientifically. It is a way to systematically solve the research problem by logically adopting various steps. When we talk of research methodology, we not only talk of research methods, but also consider the logic behind the methods we use in context of our research study and explain why we are using a particular method or technique, so that the results are capable of being evaluated by self or others.

1.10 GLOSSARY

- **Research:** A systematic investigation to establish facts, discover new knowledge, or develop new technology.
- **Basic Research:** Research aimed at increasing fundamental knowledge and understanding of phenomena, without immediate practical applications.
- **Reliability:** The consistency and stability of research findings.

- **Validity:** The accuracy and truthfulness of research findings.
- **Data Analysis:** The process of examining and interpreting data to draw conclusions.
- **Statistics:** A branch of mathematics used to collect, analyze, and interpret data.
- **Methodology:** The specific methods and procedures used to conduct a research study.

1.11 SELF ASSESSMENT QUESTIONS

1. What do you understand by term method and methodology.

2. What are the basic elements of scientific research methodology.

3. Write down the various research approaches in brief.

4. Briefly write down the steps involve in formulating a research problem.

1.12 LESSON END EXERCISE

Q1. What are the steps of the research process.

.....
.....
.....
.....

Q2. What are the characteristics of a good research study.

.....
.....
.....
.....

Q3. How do you formulate a research problem.

.....
.....
.....
.....

1.13 ANSWERS TO CHECK YOUR PROGRESS

Ans I A: a -i, b-ii

Ans II a-i, b-ii

1.14 SUGGESTED READINGS

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METHODS

STRUCTURE

- 2.0 Learning Objectives**
- 2.1 Introduction**
- 2.2 Meaning of Research**
 - 2.2.1 Types of Research**
- 2.3 Methods of Research**
 - 2.3.1 Non-Experimental and Experimental Methods**
- 2.4 Difference between Qualitative and Quantitative Research Methods.**
- 2.5 Qualitative Research**
 - 2.5.1 Sampling In Qualitative Research**
 - 2.5.2 Qualitative Research Methods**
 - 2.5.3 Strength of Qualitative Research**
 - 2.5.4 Weaknesses of Qualitative Research**
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 - 2.6.1 Sampling In Quantitative Research**
 - 2.6.2 Quantitative Research Methods**
 - 2.6.3 Strength of Quantitative Research**
 - 2.6.4 Weaknesses of Quantitative Research**
- 2.7 Let Us Sum Up**
- 2.8 Glossary**

- 2.9 Self-Assessment Questions
- 2.10 Lesson End Exercise
- 2.11 Answers to check your progress
- 2.12 Suggested Readings

2.0 LEARNING OBJECTIVES

Dear Learner, after going through this lesson, you will be able to:

- understand the basic concept of research and research methods
- consider ways of knowing and types of research
- know the difference between qualitative and quantitative research methods
- know the strength and weaknesses of qualitative and quantitative research methods

2.1 INTRODUCTION

Dear learner, this chapter deals with explaining the term ‘research methods’ of social science. The word research means search for truth, search for new knowledge. To fulfill the purpose, we need some methods by which we can collect the required information (data). There are various research methods that can be used in social science research which are discussed in this chapter.

2.2 MEANING OF RESEARCH

Research Method: It is a behavior and instrument used in selecting and constructing technique (a range of approaches used to gather data). The goal of the research process is to produce new knowledge. This process takes three main forms:

- Exploratory research, which structures and identifies new problems
- Constructive research, which develops solutions to a problem
- Empirical research, which tests the feasibility of a solution using empirical evidence

Research can also fall into two distinct types:

- Primary research (collection of data that does not exist yet)

- Secondary research (summary, collation and/or synthesis of existing research)

In social sciences and later in other disciplines, the following two research methods can be applied, depending on the properties of the subject matter and on the objective of the research:

- **Qualitative research** (understanding of human behavior and the reasons that govern such behavior)
- **Quantitative research** (systematic empirical investigation of quantitative properties and phenomena and their relationships)

Research is often conducted using the hourglass model Structure of Research The hourglass model starts with a broad spectrum for research, focusing in on the required information through the methodology of the project (like the neck of the hourglass), then expands the research in the form of discussion and results. Methods are more than techniques but frequently the terms are used interchangeably.

2.2.1 Social research methods may be divided into two broad categories:

- 1. Quantitative Design**
- 2. Qualitative Design**

- 1. Quantitative Designs:** They approach social phenomenon through quantifiable evidence, and after rely on statistical analysis of many cases to create valid and reliable general claims.
- 2. Qualitative Design:** They emphasize understanding of social phenomenon through direct observation, communication with participants or analysis of tests and may stress contextual and subjective accuracy over generality.

Both qualitative and quantitative approaches involve a systematic interaction between theory and data. The choice of the method often depends upon what the investigator wants to investigate. Studies will commonly combine or 'triangulate' quantitative and qualitative methods as part of 'multi strategy' design many qualitative studies follow a deductive approach and qualitative studies are more inductive.

Two types of approaches to the relationship between theory and research include the deductive and inductive methods. The deductive method argues from the general to specific. A researcher here begins with a hypothesis, then makes observations, collects data to test that hypothesis and tries to accept or reject the hypothesis based on empirical evidence. The deductive

methodology rests on theories and hypothesis. The inductive method in contrast goes from specific to the general. Social scientists, here, observe social phenomenon, identify patterns and then analyze them to reach broad conclusions and develop new theories.

2.3 METHODS OF RESEARCH

Methods classified

Non-experimental

Library Research

1) Analysis of historical
Record

2) Analysis of documents

Experimental

Field Research

i) Observation:

- Participant

- Non-participant

- Mass

ii) Questionnaire

iii) Interviews

iv) Surveys

v) Case study / life
history

i) Single factor

ii) Factorial

iii) Single Subject

iv) Quasi

CHECK YOUR PROGRESS - I

NOTE: Write your answers in the space given below.

A) Tick the right choice:

a) Which design of research emphasize to understand the social Phenomenon through observation

i) Qualitative Design ii) Quantitative Design

b) Collection of data that does not exist yet refers to:

i) Primary Research ii) Secondary Research

B) Answer the following questions

a) Define

b) Define Deductive method in two lines

2.4 DIFFERENCE BETWEEN QUALITATIVE AND QUANTITATIVE RESEARCH METHODS

Qualitative Method	Qualitative Method
<ul style="list-style-type: none"> - Methods include focus group, in depth interviews and reviews. - Primarily inductive process used to test formulates theory. 	<ul style="list-style-type: none"> - Surveys - Primarily deductive process used to Pre-specified concepts, constructs and Hypothesis the make up a

<ul style="list-style-type: none"> - More Subjective: describe a problem or condition from the point of view of those experiencing it. - Text based. - In depth information in few cases - Unstructured or semi-structured response Options. - No statistical test used. - These can be valid and reliable: Largely depends on skills and vigor of the researcher. - Time expenditure lighter in planning but heavier in analysis phase. - Less generalizable. <p>Quantitative Method</p> <ul style="list-style-type: none"> - Surveys 	<ul style="list-style-type: none"> - More Objective: provides objective effects of a program on a problem or condition. - Number based. - Less in depth but more breadth of Information across a large number of cases. - Fixed response options. - Statistical test used. - These can be valid and reliable: Largely depends on measurement devices or instruments used. - Time expenditure heavier on planning Lighter in analysis. - More generalizable.
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2.5 QUALITATIVE RESEARCH

Qualitative research is a type of scientific research. It is especially effective in obtaining culturally specific information about the values, opinions, behaviors and social contexts of particular

population. It provides information about the human's side of an issue that is contradictory behavior, beliefs, opinions, emotions and relationships of individuals. They are also effective in identifying intangible factors, such as social norms, socio-economic status, gender roles, ethnicity and religion.

The three most important qualitative methods are participant observation, in-depth interviews and focus groups. The types of data these three generate are field notes, audio-visual recordings and transcripts.

The key difference between the qualitative and quantitative methods is their flexibility. They allow greater spontaneity and adaptation of interaction between the researcher and the study participant. The relationship between the researcher and participant is less formal. One of the advantages of qualitative methods in exploratory research is that use of open-ended questions and probing gives participants the opportunity to respond in their own words.

2.5.1 Sampling in Qualitative research:

Only a sample of a population is selected for any given study. The study research objective and characteristics of the study population (such as size and diversity) determine which and how many people to select. Three common sampling methods used are: -

i) Purposive Sampling

i) Quota Sampling

iii) Snowball Sampling

i) Purposive Sampling: It groups the participants according to pre-selected criteria relevant to particular research question, e.g. HIV+ive women in Jammu. Sample size may depend on the resources available i.e. time, money and energy; as well as objectives of the study. Purposive sample sizes are often determined on the basis of theoretical saturation i.e. the point in data collection when new data no longer brings additional insight to research question.

ii) Quota Sampling: While designing the study it is decided how many people which characteristics may include age, place of residence gender, class profession, marital status, HIV status? Then we go into the community and using recruitment strategies appropriate to the location, culture and study population - and fit these criteria, until we meet the prescribed quotas. Quota sampling is more specific with respect to sizes and proportion of sub samples.

iii) Snowball Sampling: It is also known as chain referral sampling. In this method, participants or informants with whom contact has already been made use their social networks to refer the researcher to other people who could potentially participate or contribute to study. It is often used to recruit 'hidden population' for example: - HIV AIDS Patients.

2.5.2 Qualitative Research Methods:

Qualitative data is a source of well grouped rich description and explanation of process in indispensable local context.

1. Qualitative Research interview:

Kvale (1996) defines the qualitative research interview "An interview whose purpose is to gather descriptions of the life-world of the interviewee with respect to interpretation of the meaning of the described phenomenon." The goals of any qualitative research interview are therefore to see the research topic from the perspective of the interviewee and to understand how and why they come to have this particular perspective. Kind (1994) suggests guidelines for the use of interview:

- A study focuses on the meaning of particular phenomenon to the participants.
- Individual perception of processes within a social unit is to be studied prospectively; using a series of interviews.
- Interview historical accounts are required of how a particular phenomenon developed.
- Exploratory work is required before a quantitative study is carried out.
- Quantitative study has been carried out and to validate the particular measure or to classify and illustrate the meaning of these findings.

2. Participant Observation:

When ones concern the experience of people the way that they think, feel and act, the most truthful, reliable, complete and simple way of getting that information is to share their experience'. Although participant observation is chiefly concerned with observation and recording of human activity most practitioners of the method adhere to the principle of 'triangulation' -use of more than one method for data collection. According to Waddington (1854), "Participant observation is the best suited to research projects which emphasize the importance of meanings, interpretations and interactions, where the phenomenon under study is generally observed from the public view, where it is controversial, and where it is little understood and an Insider' may enhance the existing knowledge.

3. Case Studies:

The case study is a research strategy which focuses on understanding the dynamics present within single settings and usually refers to relatively intensive analysis of a single instance of a phenomenon using investigated. Yin (1994) defines case study as an empirical investigation into contemporary phenomenon operating in a real-life context. Case study research is a heterogeneous activity covering a range of research methods and techniques, a range of coverage, differing length and levels of involvement and

different range of data. Detailed case studies may be essential in comparative research, where on intimate understanding of what concepts mean to people, the meanings attached to particular behavior and how behavior is linked.

2.5.3 Strengths of qualitative methods:

- Obtaining a more realistic feel of world that cannot be experienced in the numerical data and statistical analysis used in qualitative research.
- Flexible ways to perform data collection, subsequent analysis, and interpretation of collection information.
- Provide a holistic view of the phenomenon under investigation.
- Ability to interact with research subject in their own language and on their own terms.
- Descriptive capability based on the primary and unstructured data.

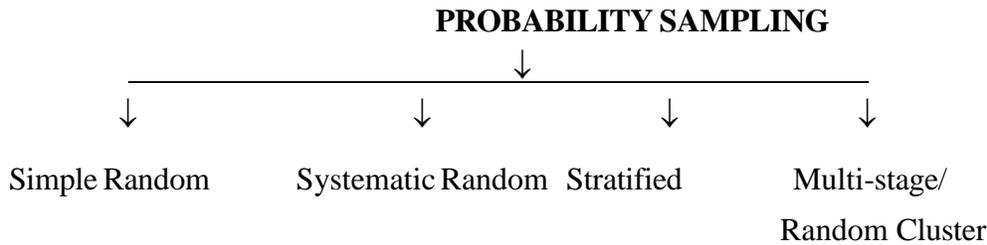
2.5.4 Weaknesses:

- Departing from the original objectives of research in response to the changing nature of the context.
- Arriving to different conclusions based on the personal characteristics of the researcher.
- Inability to investigate causality between different research phenomena.
- Difficulties in explaining the difference in the quality of information obtained from different respondents and arriving at different, non-consistent conclusions.
- Requiring a high level of experience from the researcher.
- Lacking consistency and reliability because researcher can employ different probing techniques and the respondents can choose to tell some particular strives and ignore others.

2.6 QUANTITATIVE RESEARCH

The functional or positivist paradigm that guides the quantitative mode of inquiry is based on the assumption that social reality has an objective ontological structure and that individuals are responding agents to this objective environment. Quantitative research involves counting and measuring of events and performing statistical analysis. The main concern of the quantitative paradigm is that measurement is reliable, valid and generalizable in its clear prediction of cause and effect.

2.6.1 Sampling in quantitative methods:



- **Simple Random Sampling:** The first statistical sampling method is simple random sampling. In this method, each item in the population has the same probability of being selected as part of the sample as any other item. For example, a tester could randomly select 5 inputs to a test case from the population of all possible valid inputs within a range of 1-100 to use during test execution, to do this the tester could use a random number generator or simply put each number from 1-100 on a slip of paper in a bowl, mixing them up and drawing out 5 numbers. Random sampling can be done with or without replacement. If it is done without replacement, an item is not returned to the population after it is selected and thus can only occur once in the sample.
- **Systematic Random Sampling:** Systematic sampling is another statistical sampling method. In this method, every n th element from the list is selected as the sample, starting with a sample element n randomly selected from the first k elements. For example, if the population has 1000 elements and a sample size of 100 is needed, then k would be $1000/100 = 10$. If number 7 is randomly selected from the first ten elements on the list, the sample would continue down the list selecting the 7th element from each group of ten elements. Care must be taken when using systematic sampling to ensure that the original population list has not been ordered in a way that introduces any non-random factors into the sampling. An example of systematic sampling would be if the auditor of the acceptance test process selected the 14th acceptance test case out of the first 20 test cases in a random list of all acceptance test cases to retest during the audit process. The auditor would then keep adding twenty and select the 34th test case, 54th test case, 74th test case and so on to retest until the end is reached.
- **Stratified Sampling:** The statistical sampling method is also called as stratified sampling and is used when representatives from each subgroup within the population need to be represented in the sample. The first step in stratified sampling is to divide the population into subgroups (strata) based on mutually exclusive criteria. Random or systematic samples are then taken from each subgroup. The sampling fraction for each subgroup may be taken in the same proportion as the subgroup has in

the population. For example, if the person conducting a customer satisfaction survey selected random customers from each customer type in proportion to the number of customers of that type in the population. For example, if 40 samples are to be selected, and 10% of the customers are managers, 60% are users, 25% are operators and 5% are database administrators then 4 managers, 24 users, 10 operators and 2 administrators would be randomly selected. Stratified sampling can also sample an equal number of items from each subgroup. For example, a development lead randomly selected three modules out of each programming language used to examine against the coding standard.

- **Multi Stage Sampling/Cluster Sampling:** The fourth statistical sampling method is called cluster sampling, also called block sampling. In cluster sampling, the population that is being sampled is divided into groups called clusters. Instead of these subgroups being homogeneous based on selected criteria as in stratified sampling, a cluster is as heterogeneous as possible to matching the population. A random sample is then taken from within one or more selected clusters. For example, if an organization has 30 small projects currently under development, an auditor looking for compliance to the coding standard might use cluster sampling to randomly select 4 of those projects as representatives for the audit and then randomly sample code modules for auditing from just those 4 projects. Cluster sampling can tell us a lot about that particular cluster, but unless the clusters are selected randomly and a lot of clusters are sampled, generalizations cannot always be made about the entire population. For example, random sampling from all the source code modules written during the previous week, or all the modules in a particular subsystem, or all modules written in a particular language may cause biases to enter the sample that would not allow statistically valid generalization.

2.6.2 Quantitative research methods:

Two main approaches:

- Surveys and questionnaires
- Experimental designs and intervention

Survey:

A series of self-report measures, administered through an interview or a written questionnaire'. The goal is to produce a snapshot of opinions, attitudes, often administered as an interview (phone, face to face).

Questionnaire:

A set of fixed formats, self-report items that is completed by respondents at their own pace. It may produce more honest responses to sensitive topics. Cheaper than face to face interviews.

Experiments:

Enables researchers to demonstrate how manipulating one set of variables (independent variable) produce systematic changes in another set of variables (outcome or dependent variables). Different experimental designs

- Posttest design
- Pre-test/post-test design
- Repeated measures
- Randomized control trial (RCT)

2.6.3 Strength of quantitative methods:

- Stating the research problem in very specific and set terms.
- Clearly and precisely specifying both the independent and dependent variables.
- Following firmly the original set of research goals, arriving at more objective conclusions, testing hypothesis, determining issues of causality.
- Achieving high levels of reliability of gathered data due to controlled observation, laboratory experiments, mass surveys etc.
- Eliminating or minimizing subjectivity of judgment.
- Allowing longitudinal measurements of subsequent performance of research

2.6.4 Weaknesses:

- Failure to provide the researcher with information on the context of the situation where the studied phenomenon occurs.
- Inability to control the environment where the respondents provide the answer to the questions in the survey.
- Limited outcomes to only those outlined in the original research proposal due to closed type questions and structured format.
- Not encouraging the evolving and continuous investigation of a research phenomenon.

CHECK YOUR PROGRESS - II

NOTE: - Write your answers in the space given below.

A) Tick the right choice: -

- a) A set of fixed formats, self-report items that is completed by respondents at their own pace
 - i) Questionnaire
 - ii) Interview schedule.
- b) Case study research is activity:
 - i) Homogeneous
 - ii) Heterogeneous

B) Answer the following questions

- a) Write the weaknesses of quantitative method of research.

- b) Define Multi stage sampling.

2.7 LET US SUM UP

In short research method is the discipline which forms the foundation of modern scientific enquiry. Both qualitative and quantitative approaches involve a systematic interaction between theory and data. The choice of the method often depends upon what investigate or wants to investigate. Studies will commonly combine or 'triangulate' quantitative and qualitative methods as part of 'multi strategy' design many qualitative studies follow a deductive approach and qualitative studies are more inductive.

2.8 GLOSSARY

1. **Quantitative Designs:** They approach social phenomenon through quantifiable evidence, and after rely on statistical analysis of many cases to create valid and reliable general claims.
2. **Qualitative Designs:** They emphasize understanding of social phenomenon through direct observation, communication with participants or analysis of tests and may stress contextual and subjective accuracy over generality.

2.9 SELF ASSESSMENT QUESTIONS

1. What do you understand by term research.

2. Discuss any two methods of research.

3. Write down the difference between qualitative and quantitative research methods.

4. Write down the strengths of quantitative method of research.

2.10 LESSON END EXERCISE

Q1. What is the difference between quantitative and qualitative research.

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Q2. What is mixed methods research.

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Q3. What is sampling.

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Q4. What are some methods for data collection.

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2.11 ANSWERS TO CHECK YOUR PROGRESS

Ans I a- i, b-i

Ans II a-i, b-i

2.12 SUGGESTED READINGS

1. Ahuja, Ram. (2009). Research methods Rawat Publications, Satyam apartments, sector —3 Jawahar Nagar, Jaipur.
2. Kerlinger, Fredn. (1983) Foundation of Behavioral Research, (2nd Edition). Surjeet Publications, 7 — K. Kolhapur Road, Kamla Nagar Delhi.
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TECHNIQUES-CONCEPTUAL CLARIFICATION

STRUCTURE

- 3.0 Learning Objectives**
- 3.1 Introduction**
- 3.2 Meaning of Techniques**
- 3.3 Types Of Techniques**
- 3.4 Sampling Techniques**
- 3.5 Measurement and Scaling Techniques**
- 3.6 Techniques for data collection**
- 3.7 Techniques for analysis of data**
- 3.8 Let us sum up**
- 3.9 Glossary**
- 3.10 Self-Assessment Questions**
- 3.11 Lesson End Exercise**
- 3.12 Answers to check your progress**
- 3.13 Suggested Readings**

3.0 LEARNING OBJECTIVES

Dear Learner, after going through this lesson, you will be able to:

- **Understand the basic concept of Techniques**
- **Consider various techniques used in research**

- **Know the various steps involve in the process of data analysis**

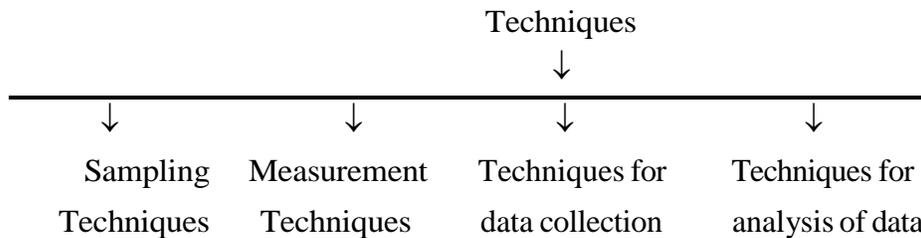
3.1 INTRODUCTION

Dear students, this chapter deals with explaining the 'Research Techniques' of social science. To fulfill the purpose of our research we need some techniques by which we can collect the required information (data). There are various research techniques that can be used in social science research which are discussed in this lesson.

3.2 MEANING OF TECHNIQUES

A technique is a procedure used to accomplish a specific activity or task; a way of doing something, especially a systematic way; implies an orderly logical arrangement. There are various techniques used in research process. Let us discuss them in detail:

3.3 TYPES OF TECHNIQUES



3.4 SAMPLING TECHNIQUES

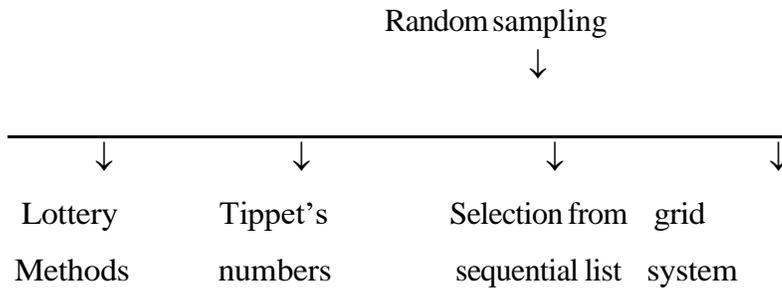
A survey may be conducted by either

- a) census
- b) Sampling method.

When the whole population is contacted the method is known as census method. When a small group is selected as representative of the whole mass it is known as sampling method. The whole group from which the sample has been drawn is technically known as universe or population and the group actually selected for study is known as sample.

A number of techniques are used for drawing sample but they can be grouped into following heads: -

1. **Random sampling:** is the form applied when the method of selection assures each individual or element in universe and equal chance of being chosen. Four methods of random sampling are: -



2. **Quota Sampling:** In this, the population is divided into different strata. The investigator is assigned certain quota with a request to select persons for filling in this quota in accordance with the proportion of the population.
3. **Purposive Sampling:** In this Procedure it is assumed that with good judgment one can hand pick the cases to be included in the sample and thus develop samples that are satisfactory in relation to one's need. The cases that are judged to be typical of the population in which one is interested are picked on the assumption that error of judgment in the selection will tend to counter balance each other. The objective basis for making the judgment is an essential point to be considered.
4. **Stratified Random Sampling:** It gives opportunity to divide the population into two or more strata based on a single criterion such as sex or combination of two or more criterion such as sex and age; this will result in homogeneous strata.
5. **Multistage Sampling/ Cluster Sampling:** The Selection of the sample is made in different stages. This method is combination of random sampling and stratified sampling. Greater representation can be achieved in shortest possible number and representation of every area is secured.
6. **Convenience Sampling:** A sample is selected according to the convenience of the investigator. This convenience may be in respect of availability of source list, accessibility of the units etc.
7. **Self-Selected sampling:** Selection is done by the representative units themselves. This method becomes applicable when sampling area is not fixed.

3.5 MEASUREMENT AND SCALING TECHNIQUES

It is a process of mapping aspects of a domain into other aspects of a range according to some rule of correspondence. In measuring, we devise some forms of scale in the range (in terms of set theory, range may refer to some set) and then transform or map the properties of objects from the domains (in terms of set theory, domains refer to some other set) into this scale.

MEASUREMENT SCALE: scales of measurements can be considered in terms of their mathematical properties. The most widely used classification of measurement scales is: -

- a) Nominal Scale
 - b) Ordinal Scale
 - c) Interval Scale
 - d) Ratio Scale
- A) Nominal Scale:** It is simply a system of assigning number symbols to events in order to label them. The usual example of this is the assignment of numbers of basketball players in order to identify them.
- B) Ordinal Scale:** The lowest level of the ordered scale that is commonly used is the ordinal scale. The ordinal scale places events in order, but there is no attempt to make the intervals of scale equal in terms of some rules. The use of ordinal scales implies a statement of 'greater than' or 'less than' (an equality statement is also acceptable) without our being able to state how much greater or less.
- C) Interval Scales:** In the case of interval scales, the intervals are adjusted in terms of some rule that has been established as a basis for making the units equal. The units are equal only in so far as one accepts the assumptions on which the rule is based. Interval scales can have an arbitrary Zero, but it is not possible to determine them what may be called an absolute Zero or the unique origin.
- D) Ratio Scale:** Ratio scales have an absolute or true zero of the measurement. The term 'absolute zero' is not as precise as it was once believed to be. We can conceive of an absolute zero of time. Ratio scale represents the actual number of variables.

SCALING

Scaling describes the procedures of assigning numbers to various degrees of opinion, attitude and other concepts. This can be done in two ways viz. i) making a judgment about some characteristics of an individual and then replacing him directly on a scale that has been defined in terms of those characteristics. ii) Constructing questionnaire in such a way that the scores of an individual's responses assign him a place on a scale. It may be stated that scale is a continuum, consisting of the highest point (in terms of some characteristics e.g. Preference, Favorableness, etc.) and the lowest point along with intermediate points between these two extreme points.

- **SCALE CLASSIFICATION BASES**

The number of the scaling procedure may be broadly classified on one or more of the following bases:

- i. Subject Orientation.
- ii. Response Form.
- iii. Degree of Subjectivity.
- iv. Scale properties.
- v. Number of Dimensions.

CHECK YOUR PROGRESS-I

NOTE: - Write your answers in the space given below.

A) Tick the right choice:

a) In this Procedure it is assumed that with good judgment one can hand pick the cases to be included in the sample

i) Purposive Sampling ii) Stratified Random Sampling

b) Multistage Sampling is also known as _____

i) Cluster Sampling ii) Quota Sampling

B) Answer the following questions

a) Explain in brief random sampling.

b) Define ratio scale.

3.6 TECHNIQUES FOR DATA COLLECTION

The task of data collection begins after a research problem has been defined and research design has been chalked out. While deciding about the method of data collection to be used for the purpose, the researcher should keep in mind the two types of data viz., Primary data and Secondary data.

- **PRIMARY DATA:** Primary data is that which is collected afresh and for the first time and thus happen to be original in character.
- **SECONDARY DATA:** Secondary data is that which has already been collected by someone else and which has already been passed through the statistical process.

COLLECTION OF PRIMARY DATA: There are several methods of collecting primary data, particularly in survey and descriptive researches. These are as follows:

- a) Observation Method
- b) Interview Method
- c) Questionnaire
- d) Schedules

a) OBSERVATION METHOD

Observation Method is the most commonly used method especially in studies relating to behavioral sciences. Observation becomes a scientific tool and the method of data collection, when it serves a formulated research purpose, is systematically planned and recorded and is subjected to checks and controls on validity and reliability. Observation is further divided into different types which are as follows:

- | | | | |
|------------------------|---|-----------------------------|-------------|
| Structured Observation | - | Unstructured Observation | Participant |
| Observation | - | Non-Participant Observation | Controlled |
| Observation | - | Uncontrolled Observation | |

b) INTERVIEW METHOD

The interview method of collecting data involves presentation of oral verbal stimuli and reply in terms of oral-verbal responses. This method can be used through personal interviews and if possible, through telephone interviews. The interview method is further divided into following types: -

- | | | | |
|----------------------|---|-------------------------|-------------------|
| Structured Interview | - | Unstructured Interview | Focused Interview |
| | - | In-depth Interview | |
| Clinical Interview | - | Non-Directive Interview | |

c) QUESTIONNAIRE

This method of data collection is quite popular, particularly in case of big enquiries. A questionnaire consists of a number of questions printed or typed in a definite order on a form or set forms. The questionnaire is mailed or distributed to respondents and the respondents have to answer the question themselves.

d) SCHEDULE

This method of data collection is very much like the data collection through questionnaire, but the only difference between both is that the questionnaire is generally sent through mail or distributed to informants to be answered as specified in a covering letter, but otherwise without further assistance from sender. On the other hand, the schedule is generally filled out by the research worker or the

enumerator, who can interpret questions when necessary.

SOME OTHER METHODS OF DATA COLLECTION ARE:

- i. Warranty Cards
- ii. Distributor or Store Audits
- iii. Pantry Audit
- iv. Consumer Panel
- v. Use of Mechanical Devices
- vi. Projective Techniques:
 - a) Word association test
 - b) Story completion test
 - c) Sentence completion test
 - d) Pictorial techniques
 - e) Verbal Projection Test
 - f) Play techniques
 - g) Quizzes, test and examination
 - h) content analysis

COLLECTION OF SECONDARY DATA

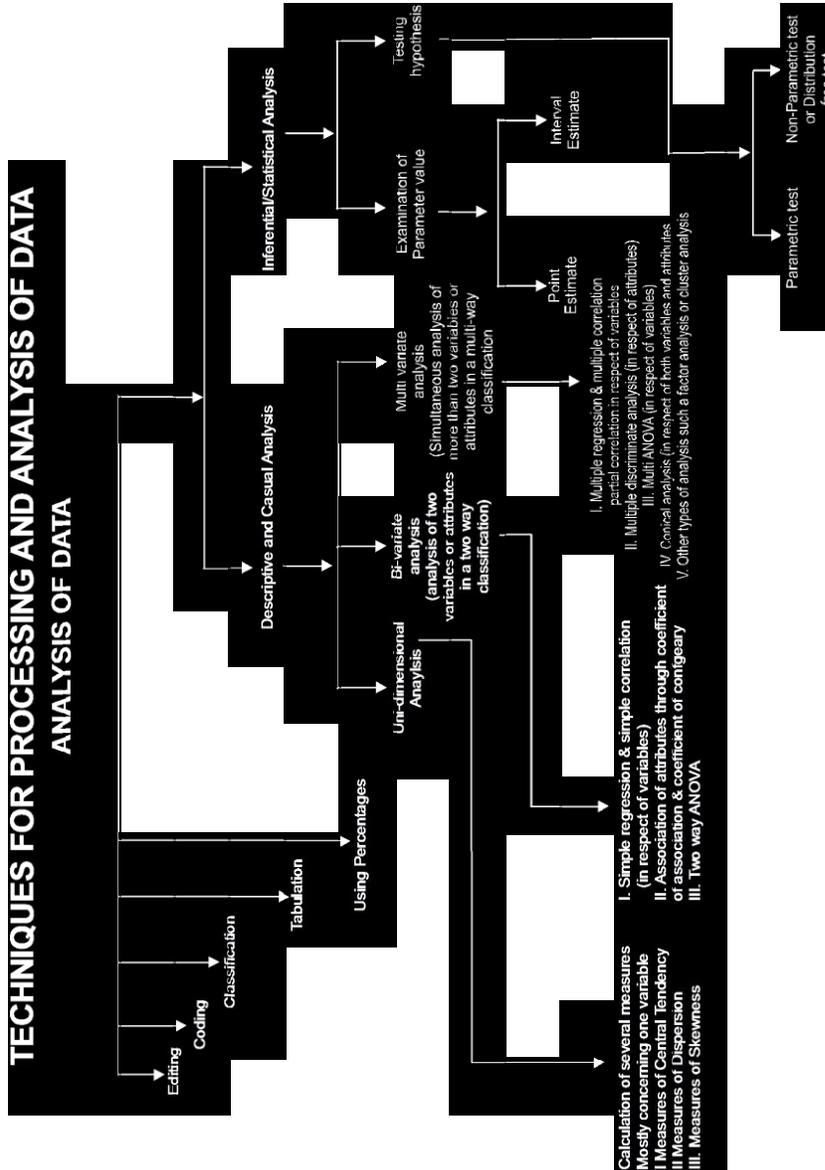
Secondary Data means data that are already available. When the researcher utilizes secondary data, he has to look into various sources from where he can obtain them. In this case he is certainly not confronted with the problems that are usually associated with the collection of original data. Secondary data may either published or unpublished data. Usually, the published data are available in: -

- a) Various publications of the central, state and local government.
- b) Various publications of foreign government or of international bodies and their subsidiary organizations.
- c) Technical and trade journals.
- d) Books, magazines and newspapers.
- e) Reports and publications of various associations connected with business and industry, bank, stock exchange etc.
- f) Reports prepared by research scholars, universities, economists etc. in different fields.

- g) Public records and statistics, historical documents and other sources of published information.

The sources of unpublished data are many. They may be found in diaries, letters, unpublished biographies and autobiographies and also may be available with scholars and research workers, trade associations, labour bureaus and other public/private individuals and organizations.

3.7 TECHNIQUES FOR ANALYSIS OF DATA



CHECK YOUR PROGRESS - II

NOTE: Write your answers in the space given below.

-

Tick the right choice: -

- a) The questionnaire:
 - i) is mailed to respondents and the respondents has to answer the question on their own
 - ii) involves presentation of oral verbal stimuli
- b) Secondary Data means data that are
 - i) Already available
 - ii) Original in

B) Answer the following questions

- a) Explain in brief observation method.

- b) Explain difference between Questionnaire and Schedule.

3.8 LET US SUM UP

A wide range of research techniques are used in social science. These methods vary by the sources of information that are drawn on, how that information is sampled, and the types of instruments that are used in data collection. Techniques also vary by whether they collect qualitative data, quantitative data or both.

3.9 GLOSSARY

1. Techniques of data collection: The methods and procedures used to collect, process, analyze, and interpret data, transforming raw information into meaningful insights. These techniques are crucial for various fields, including research, business, and data science, enabling informed decision-making and problem-solving.

2. Data Collection: This involves gathering information from various sources, including surveys, interviews, observations, and experiments.

- **Primary Data Collection:** Gathering original data directly from the source, such as through questionnaires or interviews.
- **Secondary Data Collection:** Utilizing existing data sources like reports, publications, or databases.

3. Data Interpretation: This involves drawing conclusions and making informed decisions based on the results of data analysis.

4. Data Analysis: This encompasses various techniques to extract meaningful patterns and insights from data.

3.10 SELF ASSESSMENT QUESTIONS

Q1 What do you understand by term techniques of data collection.

Q2 Explain any two sampling techniques in brief.

Q3 Write down the difference between primary and secondary data.

3.11 LESSON END EXERCISE

- **Multiple Choice Questions**

1. Find out an example for Discrete variable?

- A) Number of children B) height
C) Distance D) speed

Answer: A

2. Which of the following is considered as the characteristics of research

- A) Observable or empirical evidence B) It adopts scientific method
C) Planned and critical investigation of a phenomenon D) All of the above

Answer: D

3. Which of the following an indispensable element of the scientific method?

- A) Value judgement B) Objectivity
C) Arbitrary methods D) Variables

Answer: B

4. Which type of research purpose is to gaining knowledge without any intention of applying it in practice?

- A) Pure research B) Applied research
C) **Formulative research** **D) Descriptive research**

Answer: A

3.12 ANSWERS TO CHECK YOUR PROGRESS

Ans a) -i, b)-i

3.13 SUGGESTED READINGS

- Ahuja, Ram (2009) Research methods Rawat Publications, Satyam apartments, sector — 3 Jawahar Nagar, Jaipur.
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THEORY BUILDING

STRUCTURE

- 4.0 Learning Objectives**
- 4.1 Introduction**
- 4.2 Meaning of scientific theory**
- 4.3 Parts of theory**
 - 4.3.1 Concepts**
 - 4.3.2 Proposition**
- 4.4 Role of theory**
- 4.5 Judging the usefulness of a theory**
- 4.6 Types of theories**
- 4.7 Aspects of theory**
- 4.8 Theory and Fact**
- 4.9 Contribution of research to theory**
- 4.10 The functions of research for theory**
- 4.11 Let Us Sum Up**
- 4.12 Glossary**
- 4.13 Self-Assessment Questions**
- 4.14 Lesson End Exercise**
- 4.15 Answers to check your progress**

4.16 Suggested Readings

4.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- understand the basic concept of theory
- know the types of theory and aspects of theory
- understand the usefulness of a theory.

4.1 INTRODUCTION

This chapter deals with explaining the concept of theory. This chapter will enable the learners to know the parts of theory, types of theories, contribution of research to theory and function of research for theory.

4.2 MEANING OF SCIENTIFIC THEORY

A scientific theory is a statement about the casual relationships among abstract constructs. It is a statement that holds for specific types of people, time and setting. Scientific theory is a term which has been derived from Greek word 'theories means 'to look at'. Merton points out that among sociologists, the term, 'Sociological theory' has had at least six different meanings. In the early days of a science, theories were often the result of arm chair speculation and had meager support from empirical data. Theory and facts became more and more connected as science developed.

Currently there are two schools of thought regarding what a theory is:

- One that consider theory “a set of well-supported empirical generalizations or laws”.
- Another that defines a theory as " an interrelated set of definitions, axioms, or propositions"
 1. **Karl Popper** says, "Theories are nets cast to catch what we call 'the word', to rationalize, to explain and also to master it. We endeavor to make the mesh finer and fine?"
 2. **Pearsons** observes, "The theoretical system is the body of logically independent generalized concepts of empirical reference".

3. **Johan Galtung** conceives theory as “a set of hypotheses structured by the relation of implicating of deductibility”.
4. **R.B Braithwaite** says that a theory consists of a set of hypotheses which is arranged in such a way that from some of the hypotheses all other hypotheses logically follow”.
5. **Hempel** has linked a scientific theory to a network in which terms and concepts are represented by nature of theory and the definitions and hypotheses by thread connecting the knots.

Theories are about constructs: - Constructs are abstract concept because they cannot be directly observed or measured for example: Knowledge, Love, etc.

Theories describe casual relations among constructs: - Theories state that a change in one construct (the cause) produces a corresponding change in another construct (the effect). The fact that theories can explain why certain events occur is very important, as we can conduct practical interventions to change that behavior to solve that problem.

Theories are general in scope: - Theories are intended to apply to many people across different settings and times. Social psychologists try to reach general conclusions about why people behave the way they do, both to solve large social problems as well as to understand everyday events. Research questions are thus most often provoked out of an initial curiosity; the researcher has the desire to find the answer to his or her question about events, ideas, people or phenomenon.

4.3 PARTS OF A THEORY

4.3.1 Concepts

Theory development is essentially a process of describing phenomena at increasingly higher levels of abstraction. A concept (or construct) is a generalized idea about a class of objects, attributes, occurrences, or processes that has been given a name. Such names are created or developed or constructed for the identification of the phenomenon, be it physical or non-physical. All these may be considered as empirical realities e.g. leadership, productivity, morale, motivation, inflation and happiness, etc.

Concepts are the building block of a theory. Concepts abstract reality, i.e., concepts is expressed in words, letters, signs, and symbols that refer to various events or objects. For example, the concept "asset" is an abstract term that may, in the concrete world of reality, refer to a house, car, gadgets and appliances etc. specific punch press machine. Concepts, however, may vary in degree of abstraction and we can put them in a ladder of abstraction, indicating different levels. Moving up the ladder of abstraction, the basic concept becomes more abstract, wider in scope, and less

amenable to measurement. The scientific researcher operates at two levels: on the abstract level of concepts (and propositions) and on the empirical level of variables (and hypotheses). At the empirical level we "experience" reality — that is we observe the objects or events. In this example the reality has been given a name i.e. banana. Moving up the ladder this reality falls in wider reality i.e. fruit, which in turn becomes part of further wider reality called as vegetation. Researchers are concerned with the observable world, or what we may call as "reality." We try to construct names to such empirical reality for its identification, which may refer to as concept at an abstract level. Theorists translate their conceptualization of reality into abstract ideas. Thus, theory deals with abstraction. Things are not the essence of theory; ideas are. Concepts in isolation are not theories. Only when we explain how concepts relate to other concepts, we begin to construct theories.

4.3.2 Propositions

Concepts are the basic units of theory development. However, theories require an understanding of the relationship among concepts. Thus, once reality is abstracted into concepts, the scientist is interested in the relationship among various concepts. Propositions are statements concerned with the logical relationships among concepts. A proposition explains the logical linkage among certain concepts by asserting a universal connection between concepts. Theory is an abstraction from observed reality. Concepts are at one level of abstraction. Investigating propositions requires that we increase our level abstract thinking. When we think about theories, we are at the highest level of abstraction because we are investigating the relationship between propositions. Theory is a network of propositions.

4.4 ROLE OF THEORY

1. Theory as orientation

A major function of a theoretical system is that it narrows the range of facts to be studied. Any phenomenon or object may be studied in many different ways. A football, for example, can be investigated within an economic framework, as we ascertain the patterns of demand and supply relating to this play object. It may also be the object of chemical research, for it is made of organic chemicals. It has a mass and may be studied as physical object undergoing different stresses and attaining certain velocities under various conditions. It may also be seen as the center of many sociologically interesting activities — play, communication, group organization, etc. Each science and each specialization within a broader field abstract from reality, keeping its attention upon a few aspects of given phenomena rather than on all aspects. The broad orientation of each field then focuses upon limited range of things while ignoring or making assumptions about others.

2. Theory as a conceptualization and classification

Every science is organized by a structure of concepts, which refer to major processes and objects to be studied. It is the relationship between these concepts which are stated in "the facts of science." Such terms make up the vocabulary that the scientist uses. If knowledge is to be organized, there must be some system imposed upon the facts which are observable. As a consequence, a major task in any science is the development of classification, a structure of concepts, and an increasingly precise set of definitions for these terms.

3. Theory in summarizing role

A further task which theory performs is to summarize concisely what is already known about the object of study. These summaries may be divided into two simple categories:

- (1) Empirical generalizations,
- (2) Systems of relationships between propositions.

Although the scientist may think of his field as a complex structure of relationships, most of his daily work is concerned with prior task: the simple addition of data expressed in empirical generalizations. The demographer may tabulate births and deaths during a given period in order to ascertain the crude rate of reproduction. These facts are useful and are summarized in simple or complex theoretical relationships. As body of summarizing statements develops, it is possible to see relationships between the statements. Theorizing on a still larger scale, some may attempt to integrate the major empirical generalizations of an era. It is through systems of propositions that many of our common statements must be interpreted. Facts are seen within a framework rather than in an isolated fashion.

4. Theory predicts facts

If theory summarizes facts and states a general uniformity beyond the immediate observation, it also becomes a prediction of facts. This prediction has several facets. The most obvious is the extrapolation from the known to the unknown. For example, we may observe that in every known case the introduction of Western technology has led to a sharp drop in the death rate and a relatively minor drop in the birth rate of a given nation, at least during the initial stages. Thus, we predict that if Western technology is introduced into a native culture, we shall find this process again taking place. Correspondingly we predict that in a region where Western technology has already been introduced, we shall find that this process has occurred.

5. Theory points gap in knowledge

Since theory summarizes the known facts and predicts facts which have not been observed, it must also point to areas which have not yet been explored. Theory also points to gaps of a more basic kind. While these gaps are being filled, changes in the conceptual scheme usually occur. An example from criminology may be taken. Although a substantial body of knowledge had been built up concerning criminal behavior and its causes, a body of theory dealing with causation was oriented almost exclusively to the crimes committed by the lower classes. Very little attention has been paid to the crimes committed by the middle class or, more specifically, to the crimes labeled as "white collar" and which grow out of the usual activities of businessmen. Such a gap would not be visible if our facts were not systematized and organized. As a consequence, we may say that theory does suggest where our knowledge is deficient.

Basic to modern science is an intricate relation between theory and research. The popular understanding of this relationship obscures more than it illuminates. Popular opinion generally conceives of these as direct opposites: theory is confused with speculation, and thus theory remains speculation until it is proved. When this proof is made, theory becomes fact. Facts are thought to be definite, certain, without question, and their meaning to be self-evident.

When we look at what scientists actually do when engaged in research, it becomes clear

- (1) that theory and fact are not diametrically opposed, but inextricably intertwined;
- (2) that theory is not speculation;
- (3) that scientists are very much concerned with both theory and fact (research).

Hence research produces facts and from facts we can generate theories. Theories are soft mental images whereas research covers the empirical world of hard, settled, and observable things. In this way theory and fact (research) contribute to each other.

6. Integration.
7. Fit and ability to work.

4.6 TYPES OF THEORIES

1. **Set of laws theory:** - The firm foundations upon which most scientific enquiry is based is usually expressed as a law or system of laws. It is a statement that describes a relationship in which scientists have so much confidence that they consider it an absolute 'truth'. The usefulness of this theory for achieving the goals of science can be judged by testing to what extent the theory can be used to classify and organize the components of phenomenon under study, whether it can provide logical explanations and reliable predictions.
2. **Axiomatic Theory:** - This type of theory comprises of initial set of statements (axioms), each independent of the other and from which it is possible to logically derive all other statements (propositions) of the theory. Initial statements or axioms are not required to be 'laws' fully supported by empirical evidence.
3. **Causal Process Theory:** - It is designed to promote an understanding of the events studied. It consists of an interrelated set of definitions and statements which not only defines the theory, but describe when and where the casual process is expected to occur to explain the casual process by identifying the effect of the independent variables on dependent variables.

Cohen has described four types of theories:

- **Analytical Theories:** The theories of logic and mathematics which state nothing about the real world but consists of sets of axiomatic statements (like $A=B$, $B=C$, so $A=C$).
- **Normative Theories:** Those which elaborate a set of ideal states to which one may aspire.
- **Scientific Theories:** Those which contain a set of logically interrelated and empirically verifiable propositions. Scientific theory asserts a causal connection between two or more types events. E.g. When 'X' occurs 'Y' occurs too.
- **Metaphysical Theories:** Those which are not strictly testable though they may be subject to rational appraisal.
- **Middle Range Theory:** It was proposed by Merton in 1957. It is one that is intermediate to the minor working hypotheses evolved during the research and master conceptual scheme (grand theory) from which it is hoped to derive a very large number of empirically observed uniformities of social behavior.

- **Sociological Theory:** It attempts to provide systematic explanations and predictions relating to nature, patterns and dynamics of human social interaction.
- **Substantive Theory:** It is a theory that relates directly to the empirical social world — that makes truth claims concerning social reality as opposed to theory that is concerned with methodological assumptions.
- **Systematic Theory:** A set of propositions that is well integrated with logical or casual connections between all the individual propositions and the implications of each proposition for every other proposition explicitly recognized and accounted for.

4.7 ASPECTS OF THEORY

Theories can be categorized by

- The direction of reasoning.
- The level of explanation.

1. **THE DIRECTION OF REASONING:** Usually through inductive and deductive reasoning.

DEDUCTIVE REASONING: Means reasoning from general to the particular. It is the process of concluding that something must be true because it is a special case of a general principle that is known to be true.

All children like ice-cream (general principle).

Abhay is a child (particular case).

Abhay will like ice-cream (deduction).

- **INDUCTIVE REASONING:** is reasoning from particular to general. It is the process of reasoning that a general principle is true because the special cases you've seen are true.
Yohan is tall. Yohan is a Masai. All Masai's are tall.
These approaches are applied to theory construction.
- **DEDUCTIVE APPROACH:** It implies building a theory with abstract, logical idea, and research is carried out to test the theory. It often starts with common sense or a personal experience. Theories can be changed with testing.
- **INDUCTIVE APPROACH:** It aims at building a theory by first looking at the result of many research projects and offering a theory that can be used to explain the data.

2. LEVELS OF EXPLANATION: In social sciences three levels of explanation are used for theory:

- a) **Micro level theory:** It seeks to explain behavior at the level of individual or family environment. E.g.: - Frustration—Aggression Theory, Sternberg's Theory of Love.
- b) **Macro level theory:** It seeks to explain behavior at the level of large groups of people. It aims at studying concepts like ethnicity, class or gender. Much of sociology is at macro level e.g. Conflict Theory, Theory of Evolution.
- c) **Meso level theory:** - It seeks to explain the interactions of micro level organisms. It looks at things like social institutions, organizations or communities; basically, small groups. Much of the communicator's function at meso level, though also in micro and macro level. Social psychology may also function at the meso level.

Many times, the topic may be studied at all three levels of theory.

4.8 THEORY AND FACT

Theory is confused with speculation and thus a theory remains speculation until it is proved. When this proof is made, theory becomes facts. Facts are thought to be definite, certain and without question, and their meaning is self-evident. Theory and facts are not diametrically opposed but are intertwined. A fact is regarded as an empirically verifiable observation. To the scientist, theory refers to the relationship between facts. The development of science can be considered as a constant interplay between theory and fact.

An empiricist view theories as soft mental images involving values and beliefs while facts are hard, settled and observable. A realist view is the idea that powerful influence of thoughts often dictates what we observe as facts. We only know the world through our consciousness, and it is colored by our language and subcultures.

Theory and fact are in constant interaction. Developments in one may lead to developments in the other. Theory, implicit or explicit, is basic to knowledge and even perception. Theory is not merely a passive element. It plays an active role in the uncovering of facts. We should expect that 'fact' has an equally significant part to play in the development of theory. Science actually depends upon a continuous stimulation of fact by theory and of theory by fact

4.9 CONTRIBUTIONS OF RESEARCH TO THEORY

The relation between theory and research is not a one-way relationship and since the two interact, it will be useful to examine the other direction of the relationship, i.e., the rate of empirical research in the development of social theory. One major function of empirical research is to test or verify

hypotheses deduced from existing theories and so to test these. From a well formulated theory, deductions are made about what will happen in the various situations under specific conditions. These deductions provide hypotheses for empirical research. If a given hypotheses is confirmed by studies designed to test it, such researches may be said to have made a contribution in terms of verifying the entire theoretical structure from which the deduction was made. If, on the other hand a hypothesis is not confirmed by research, the theory generating the hypotheses must be re-examined to consider whether it would be discarded as invalid or whether a small modification in it would make it consistent with research findings.

4.10 THE FUNCTIONS OF RESEARCH FOR THEORY

- 1. Research initiate theory:** Scientific research sometimes leads to findings that may press for a new formulation as a theory; a new entrant to the existing theoretical corpus of discipline. It is important to remember, however, that creating a new theory, to use Einstein's Metaphor, is not like destroying old bran and erecting a scraper in its place.
- 2. Research helps recasting of theory:** It is also through the repeated observations of hitherto neglected facts that empirical research helps improve the theoretical model. When an existing theory commonly applied to a subject- matter does not adequately take into account the deviant cases or the non-confirming results, i.e., the one that are not in accord with predictions suggested by the hypotheses derived from theory, research presses for its reformulation.
- 3. Research Refocuses theory:** Empirical research may also refocus theory by shifting the interest of researchers to new areas Empirical research affects the more general trends in the development of theory.
- 4. Research helps in clarifying theory:** Empirical research develops and refines concepts current in the discipline. Concepts are the essential building blocks of a theory. Operationalization, construction of indices and formalization of research findings enhance the clarity of theoretic concepts and variables.

CHECK YOUR PROGRESS — II

NOTE: - Write your answers in the space given below.

A) Tick the right choice: -

a) _____ aims at building a theory by first looking at the result of many research projects and offering a theory that can be used to explain the data.

i) Inductive Approach ii) Deductive Approach

b) It seeks to explain behavior at the level of individual or family environment.

i) Micro level theory ii) Macro level theory

B) Answer the following questions

a) Write the steps involve in the judgement of use-fullness of theory.

b) Explain in brief functions of theory.

4.11 LET US SUM UP

The purpose of science concerns the expansion of knowledge, the discovery of truth and to make predictions. Theory building is the means by which the basic researchers hope to achieve this purpose. Prediction and understanding are the two purposes of theory. Accomplishing the first goal allows the theorist to predict the behavior or characteristics of one phenomenon from the knowledge of another phenomenon's characteristics. Theory and research are interrelated; the dichotomy between theory and research is artificial. The value of theory and its necessity for conducting good research should be clear. Researchers who proceed without theory rarely conduct top-quality research and frequently find themselves in confusion. Researchers weave together knowledge from different studies into more abstract theory. Likewise, those who proceed without

linking theory to research or anchoring it to empirical reality are in jeopardy of floating off into incomprehensible speculation and conjecture.

4.12 GLOSSARY

1. **Theory:** Theory is a well-substantiated explanation of some aspect of the natural or social world, based on a body of facts that have been repeatedly confirmed through observation and experiment. It's more than just a guess; it's a framework that helps us understand, explain, and predict phenomena.
2. **Explanation:** Theories provide a coherent explanation for observed phenomena, connecting various facts and observations into a unified understanding.
3. **Facts:** Facts refer to verifiable and objective observations or pieces of information about a specific phenomenon or event. These observations are considered true within a specific context and can be supported by evidence or data. Essentially, facts are the building blocks of research, providing the foundation upon which theories and interpretations are built.
4. **Deductive research:** It starts with a general theory and then tests it with specific observations.
5. **Inductive research:** It starts with specific observations and then develops a general theory.

4.13 SELF ASSESSMENT QUESTIONS

Q1. Define theory? What are the different parts of theory.

Q2. Discuss the various aspect of theory in brief.

Q3. Explain the contribution of research to theory.

Q4. What are the various functions of research for theory.

4.14 LESSON END EXERCISE

- **Multiple Choice Questions**

1. Which of the following term States that there is no relationship between two population parameters?

- A) Working Hypothesis B) Null hypothesis
C) Descriptive hypothesis D) Relational Hypothesis

Answer: B

2. The data collected from published reports is known as

- A) Primary data B) Secondary data
C) Tertiary data D) none of the above

Answer: B

3. is the method of data gathering and it explaining past or existing facts based on the personal memories?

- A) Social survey B) Online survey
C) Oral history D) Content analysis

Answer: C

4. The book “Strategies for social research-The methodological imagination” authored by?

- A) Smith, H W B) Robert Hertz
C) David lane D) Andrew Milner

Answer: A

5. A variable which can take an uncountable set of values or infinite set of values, which is called?

- A) Ordinal variables B) Categorical variable
C) Intervening Variable D) Continuous variables

Answer: D

6. Subjective evaluation is the central characteristics of?

- A) Quantitative research B) Qualitative research
C) Analytical study D) Experimental research

Answer: B

4.15 ANSWERS TO CHECK YOUR PROGRESS

Answer: I) A: a) i b) i

II) A): a) ii b) ii

4.16 SUGGESTED READINGS

- Ahuja, Ram (2009) Research methods Rawat Publications, Satyam apartments, sector — 3 Jawahar Nagar, Jaipur.
- Kothari, C.R. (2004) Research Methodology Methods and Techniques (2Pd Revised Edition), New Age International Publishers.

OBJECTIVITY / VALUE NEUTRALITY

STRUCTURE

- 5.0 Learning Objectives**
- 5.1 Introduction**
- 5.2 Scientific thinking**
 - 5.2.1 Objectivity in the research process**
 - 5.2.2 Views of social scientists on objectivity**
- 5.3 Value Neutrality / Objectivity**
- 5.4 Value neutrality vs. conflict of values**
- 5.5 Max Weber: Natural Science, Social Science, and Value Relevance**
- 5.6 Sociology as a value-free science**
- 5.7 Let us sum up**
- 5.8 Glossary**
- 5.9 Self-Assessment Questions**
- 5.10 Lesson End Exercise**
- 5.11 Answers to check your progress**
- 5.12 Suggested Readings**

5.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson, you will be able to:

- **understand the basic concept of Value Neutrality/ Objectivity'**

- **consider objectivity in the research process**
- **Know the views of social scientists on value neutrality**

5.1 INTRODUCTION

Dear students, this lesson deals with explaining the term 'Value Neutrality/ Objectivity' of social science. This chapter will also enable the students to know value neutrality vs. conflict of values, sociology as a value free science.

5.2 SCIENTIFIC OBJECTIVITY

Every scientific investigation begins with a surprising fact, something that challenges our preconceived notions of what the world should be. C.S. Pierce "Objectivity is the regulative ideal that guides all inquiry [which is] largely a measure directed at how researchers undertake and carry out their research in that it requires them to be precise, unbiased, open, honest, receptive to criticism, and so on" (Smith 1990, p 171, also Phillips 1990, Schwandt 1990). In a similar vein Lather (1990, p 319) states that "objectivity means being aware and honest about how one's own beliefs, values, and biases affect the research process."

5.2.1 Objectivity in the research process

At the first step objectivity will depend on characteristics of the subject of study. The quantitative recording technique - counting - will allow the researcher to be objective if the subject is discrete and unambiguous. For example, counting people is more straightforward than counting "adults." The possible ambiguity involved in defining the latter introduces a subjective twist.

"Counting" continuous subjects (masses of people or water flow) will also require a subjective judgment by the researcher which can be ameliorated by clearly describing the unit of measure. This explains the emphasis placed on accurate documentation of methods and also illustrates the inescapable and non-symmetric linkage between quantitative and qualitative data. Establishing the quantity to be recorded requires a qualitative description.

Objectivity is a goal of scientific investigation. Sociology, also being a science, aspires for the goal objectivity. Objectivity is a frame of mind so that personal prejudices, preferences or predictions of the social scientists do not contaminate the collection of analysis of data. Thus, scientific investigations should be free from prejudices of race, color, religion, sex or ideological biases.

5.2.2 Views of Social Scientists on objectivity:

The need of objectivity in sociological research has been emphasized by all important

sociologists. For example, Durkheim in the Rules of the Sociological Method stated that social facts must be treated as things and all preconceived notions about social facts must be abandoned. Even Max Weber emphasized the need of objectivity when he said that sociology must be value free. According to Radcliffe Brown the social scientist must abandon or transcend his ethnocentric and egocentric biases while carrying out researches. Similarly, Malinowski advocated cultural relativism while anthropological field work in order to ensure objectivity.

However, objectivity continues to be an elusive goal at the practical level. In fact, one school of thought represented by Gunnar Myrdal states that total objectivity is an illusion which can never be achieved. Because all research is guided by certain viewpoints and viewpoints involve subjectivity. Myrdal suggested that the basic viewpoints should be made clear. Further he felt that subjectivity creeps in at various stages in the course of sociological research:

- 1. In the Choice of the topic:** Merton believes that the very choice of topic is influenced by personal preferences and ideological biases of the researcher. Besides personal preferences the ideological biases acquired in the course of education and training has a bearing on the choice of the topic of research. The impact of ideological biases on social-research can be very far-reaching as seen from the study of Tepostalan village in Mexico. Robert Redfield studied it with functionalist perspective and concluded that there exists total harmony between various groups in the village while Oscar Lewis studied this village at almost the same time from Marxist perspective and found that the society was conflict ridden.
- 2. In the hypotheses formulation:** Subjectivity can also creep in at the time of formulation of hypotheses. Normally hypotheses are deduced from existing body of theory. All sociological theories are produced by and are limited to particular groups whose viewpoints and interests they represent. Thus, formulation of hypotheses will automatically introduce a bias in the sociological research.
- 3. During collection of data:** The third stage at which subjectivity creeps in the course of research is that of collection of empirical data. No technique of data collection is perfect. Each technique may lead to subjectivity in one way or the other. In case of participant observation, the observer, as a result of nativisation, acquires a bias in favor of the group he is studying. While in non-participant observation, if the sociologist belongs to a different group than that under study, he is likely to impose his values and prejudices. In all societies there are certain prejudices which affect the research studies. In case of interview as a technique the data may be influenced by context of the interview, the interaction of the participants, and participant's definition of the situation and if adequate rapport does not extend between them there might be communication barriers. Thus, according to P.V Young, "interview sometimes carries

subjectivity". Finally, it can also affect the field limitations as reported by Andre Beteille study of Sripuram village in Tanjore where the Brahmins did not allow him to visit the untouchable locality and ask their point of view.

Thus, complete objectivity continues to be an elusive goal. The researcher should make his value preference clear in research monograph. Flighty trained and skilled research workers should be employed. Various methods of data collection research should be used and the result obtained from one should be cross-checked with those from the other. Field limitations must be clearly stated in the research monograph.

CHECK YOUR PROGRESS — I

NOTE: - Write your answers in the space given below

A) Tick the right choice: -

a) "The social scientist must abandon or transcend his ethnocentric and egocentric biases while carrying out researches":

i) Radcliffe Brown

ii) Malinowski

b) At Sri Puram village in Tanjore the Brahmins did not allow to visit the untouchable locality and ask their names. Who has given this point of view:

i) Andre Beteille

ii) B.R Ambedkar

B) Answer the following questions

a) Define Objectivity.

b) Explain in brief the impact of subjectivity at various stages in the course of sociological research.

5.3 VALUE NEUTRALITY

Objectivity, in the sense of value-neutrality, is commonly taken as the hallmark of scientific knowledge. The value is said to structure most social science research. It implies primarily the absence of researcher bias but also the correspondence of findings to the real world. The term 'value' here does not have an economic connotation. Value is an abstract generalized principle of behaviour expressed in concrete form in social norms to which the member of a group feels a strong commitment. In social research, values are ideas held by people about ethical behaviour or appropriate behaviour, what is right or wrong, desirable or despicable. A value judgment is a judgment of the rightness or wrongness of something or of the usefulness of something, based on a personal view or as a generalization, a value judgment can refer to a judgment based upon a particular set of values or on a particular value system. A related meaning of value judgment is an expedient evaluation based upon limited information at hand, an evaluation undertaken because a decision must be made on short notice.

Value-neutral is a related adjective suggesting independence from a value system. For example, the classification of an object sometimes depends upon context: Is it a tool or a weapon, an artifact or an ancestor? The object itself might be considered value-neutral being neither good nor bad, neither useful nor useless, neither significant nor trite, until placed in some social context

5.4 VALUE-NEUTRAL VS CONFLICT OF VALUES

In sociology, it's common to talk about value-neutral research. It's an intuitive alternative to value laden research. We have more credibility if our results aren't hopelessly biased by our personal or political motivations. Even if the choice of research problem is value driven, it is hoped that the research tools aren't contaminated. Something like statistical analysis of survey data had better be close to that value- neutral idea.

It is argued that value-neutral vs. value driven isn't the only alternative. Good research may come from a conflict of values. In other words, rather than demand that research be performed as if researcher's values don't matter, we should ask that values be made explicit and forced to confront other values via our research.

5.5 MAX WEBER: NATURAL SCIENCE, SOCIAL SCIENCE AND VALUE RELEVANCE

According to Weber, differences between the natural sciences and the social sciences arise from differences in the cognitive intentions of the investigator, not from the alleged inapplicability of scientific and generalizing methods to the subject matter of human action. What distinguishes the natural and social sciences are not an inherent difference in methods of investigation, but rather the differing interests and aims of the scientist. Both types of science involve abstraction. The richness of the world of facts, both in nature and in history, is such that a total explanation in either realm is doomed to fail. Even in physics it is impossible to predict future events in all their concrete detail.

No one, for example, can calculate in advance the dispersion of the fragments of an exploding shell. Prediction becomes possible only within a system of conceptualizations that excludes concern for those concrete facts not caught in the net of abstractions. Both the natural and the social sciences must abstract from the manifold aspects of reality; they always involve selection.

Weber insisted that a value element inevitably entered into the selection of the problem an investigator chooses to attack. There are no intrinsically scientific criteria for the selection of topics; here every man must follow his own demon, his own moral stance, but this in no way invalidates the objectivity of the social sciences. The question of whether a statement is true or false is logically distinct from that of its relevance to values. Wertbeziehung (value relevance) touches upon the selection of the problem, not upon the interpretation of phenomena. As Parsons put it, "Once a phenomenon is descriptively given, the establishment of causal relations between it and either its antecedents or its consequences is possible only through the application, explicitly or implicitly, of a formal schema of proof that is independent of any value system, except the value of scientific proof." Hence, the relativity of value orientations leading to different cognitive choices have nothing to do with questions of scientific validity. What are relativized in this view are not the findings but the problems.

Value relevance must be distinguished from value-neutrality, since they refer to two different orders of ideas. In the first place, ethical neutrality implies that once the social scientist had chosen his problem in terms of its relevance to his values, he must hold values his own or those of others in abeyance while he follows the guidelines his data reveal. He cannot impose his values on the data and he is compelled to pursue his line of inquiry whether or not the results turn out to be inimical to what he holds dear. A geneticist of liberal persuasion, for example, should not abandon his line of inquiry if his findings suggest that differences in intelligence are associated with biological traits. Value neutrality, in this first meaning of the term, refers to the normative injunction that men of science should be governed by the ethos of science in their role as scientists, but emphatically not in their role as citizens.

In addition, value neutrality refers no less importantly to another order of considerations; the disjunction between the world of facts and the world of values, the impossibility of deriving "ought statements" from "are statements." "An empirical science, Weber contended, can never advise anyone what he should do, though it may help him to clarify for himself what he can or wants to do.

The scientific treatment of value judgments may not only understand and emphatically analyze the desired ends and the ideals which underline them; it can also "judge" them critically. This criticism can be no more than a formal logical judgment of historically given value judgments and ideas, a testing of the ideals according to the postulate of the internal consistency of the desired end. It can assist [the acting person] in becoming aware of the ultimate standards of value which he does not make explicit to himself, or which he must presuppose in order to be logical. As to whether the person expressing these value judgments should adhere to these ultimate standards is his personal affair; it involves will and conscience, not empirical knowledge.

5.6 SOCIOLOGY AS A VALUE-FREE SCIENCE

The subject matter of sociology is human behavior in society. All social behavior is guided by values. Thus, the study of social behavior can never be value-free if value freedom is interpreted in the sense of absence of values because values of the society under investigation form a part of the social facts to be studied by sociology. Moreover, social research is in itself a type of social behavior and is guided by the value of search for true knowledge. Then what is meant as clarified by Max Weber value-free sociology means that the sociologist while carrying social research must confine to value relevance. Thus, the values can operate at three levels:

- At the level of philological interpretation.
- At the level of ethical interpretation in assigning value to an object of enquiry.
- At the level of rational interpretation in which the sociologists seek the meaningful relationship between phenomena in terms of causal analysis. The point of value interpretation is to establish the value towards which an activity is directed.

Sociologists should observe value neutrality while conducting social research. It means that he /she should exclude ideological or non-scientific assumption from research. He /She should not make evaluative judgment about empirical evidence. Value judgment should be restricted to sociologists' area of technical competence. He/She should make his/her own values open and clear and refrain from advocating particular values. Value neutrality enables the social scientists to fulfill the basic value of scientific enquiry that is search for true knowledge. Thus, sociology being a science cherishes the goal of value neutrality. According to Alvin Gouldner value-free principle did enhance the autonomy of sociology where it could steadily pursue basic problems rather than journalistically react to passing events and allowed it more freedom to pursue questions uninteresting either to the respectable or to the rebellious. It made sociology freer as Comte had wanted it to be to pursue all its own theoretical implications. Value free principle did contribute to the intellectual growth and emancipation of the enterprise. Value-free doctrine enhanced freedom from moral compulsiveness; it permitted a partial escape from the parochial prescriptions of the sociologists' local or native culture. Effective internalization of the value-free principle has always encouraged at least a temporary suspension of the moralizing reflexes built into the sociologist by his own society. The value-free doctrine has a paradoxical potentiality; it might enable men to make better value judgments rather than none. It could encourage a habit of mind that

might help men in discriminating between their punitive drives and their ethical sentiments. However, in practice it has been extremely difficult to fulfill this goal of value neutrality. Values creep in various stages in sociological research. According to Gunnar Myrdal total value neutrality is impossible. 'Chaos does not organize itself into cosmos. We need viewpoints.' Thus, in order to carry out social research viewpoints are needed which form the basis of hypothesis which enables the social scientists to collect empirical data. These view-points involve valuations and also while formulating the hypothesis. Thus, a sociologist has to be value frank and should make the values which have got incorporated in the choice of the topic of the research of the formulation of hypothesis clear and explicit at the very outset in the research. The value-free doctrine is useful both to those who want to escape from the world and to those who want to escape into it. They think of sociology as a way of getting ahead in the world by providing them with neutral techniques that may be sold on the open market to any buyer. The belief that it is not the business of sociologist to make value judgments is taken by some to mean that the market on which they can vend their skills is unlimited. Some sociologists have had no hesitation about doing market research designed to sell more cigarettes although well aware of the implications of recent cancer research. According to Gouldner the value-free doctrine from Weber's standpoint is an effort to compromise two of the deepest traditions of the western thought, reason and faith but that his arbitration seeks to safeguard the romantic residue in modern man. Like Freud, Weber never really believed in an enduring peace or in a final resolution of this conflict. What he did was to seek a truce through the segregation of the contenders by allowing each to dominate in different spheres of life.

CHECK YOUR PROGRESS - II

NOTE: - Write your answers in the space given below.

A) Tick the right choice: -

a) _____ is a judgment of the rightness or wrongness of something, or of the usefulness of something, based on a personal view:

i) value judgment

ii) value neutrality

b) _____ says “Once a phenomenon is descriptively given, the establishment of causal relations between it and either its antecedents or its consequences is possible only through the application, explicitly or implicitly, of a formal schema of proof that is independent of any value system, except the value of scientific proof.”

i) Weber

ii) Parsons

B) Answer the following questions

a) Explain in brief value-neutrality.

b) Explain in detail Sociology as value free science.

5.7 LET US SUM UP

Value neutrality is a term used by Weber to indicate the necessary objectivity researchers need when investigating problems in the social sciences. Weber also cautioned against the making of value judgments which coincide with the orientation or motives of the researcher. It is important to

note that although Weber believed that value neutrality was the aim of research; his view was that no science is fundamentally neutral and its observational language is never independent of the way individuals see phenomena and the questions they ask about them.

5.8 GLOSSARY

1. Objectivity: Objectivity refers to the state of being free from bias, personal opinions, and emotional influences when conducting research and interpreting findings. It emphasizes basing conclusions on facts, evidence, and logical reasoning rather than subjective feelings or preferences.

2. Subjectivity: Subjectivity in research refers to the influence of a researcher's personal perspectives, experiences, and biases on the research process. It acknowledges that researchers, like participants, bring their own unique viewpoints, interpretations, and values to the study. While traditionally viewed as a potential source of error in research, subjectivity is increasingly recognized as an inherent and sometimes valuable aspect of qualitative research.

3. Objective and Subjective: Objective information is based on facts and evidence that can be verified and is independent of personal opinions or interpretations. Subjective information, on the other hand, is based on personal feelings, opinions, and interpretations, and is therefore open to individual perspectives.

4. Value- Neutrality: It refers to the principle that researchers should strive to conduct their studies without being influenced by their personal values and biases. It emphasizes the importance of objectivity in research by acknowledging and mitigating the potential impact of the researcher's subjective beliefs on the study's design, data collection, analysis, and interpretation.

5.9 SELF ASSESSMENT QUESTIONS

Q1. Define scientific objectivity? Explain the role of objectivity in the research process.

Q2. Explain in brief the views of any two social scientists on objectivity.

Q3. Subjectivity creeps in at various stages in the course of sociological research? Justify.

Q4. Sociology is a value free science? Comment.

5.10 LESSON END EXERCISE

- **Multiple Choice Questions**

1. Which of the following factor adversely affects objectivity?

- A) Personal prejudices and bias
- B) Value judgment
- C) Ethical dilemma
- D) All of the above

Answer: D

2. Which of the following approach help the researcher to achieve objectivity?

- A) Patience and Self-control
- B) Use of standardized concepts
- C) Open mind
- D) All of the above

Answer: D

HYPOTHESIS

STRUCTURE

6.0 Learning Objectives

6.1 Introduction

6.2 Meaning and Definitions

6.3 Relationship between Theory, Facts and Hypothesis

6.4 Types of Hypotheses

6.5 Sources of Hypothesis

6.6 Characteristics of a Useful Hypothesis

6.7 Importance of Hypothesis

6.8 Let us sum up

6.9 Glossary

6.10 Self-Assessment Questions

6.11 Lesson End Exercise

6.12 Answers to check your progress

6.13 Suggested Readings

6.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to understand:

- The meaning of hypothesis.
- Relationship which exists between theory, fact and hypothesis.
- Sources and characteristics of hypothesis.
- Types of hypotheses

6.1 INTRODUCTION

A hypothesis is an assumption about relations between variables. It is a tentative explanation of the research problem or a guess about the research outcome. Before starting the research, the researcher has a rather general, diffused, even confused notion of the problem. It may take long time for researcher to say what questions he had been seeking answers to. Hence, an adequate statement about the research problem is very important. What is a good problem statement? It is an interrogative statement that asks: what relationship exists between two or more variables? It then further asks questions like: If A is related to B or not? How are A and B related to C? Is A related to B under conditions X and Y? Proposing a statement pertaining to relationship between A and B is called a hypothesis.

6.2 MEANING AND DEFINITIONS

1. According to **Black and Champion**, "A hypothesis is a tentative statement about something, the validity of which is usually unknown."
2. **Webster** has defined hypothesis as "a tentative assumptions made in order to draw out and test its logical or empirical consequences" "**Test**" here means either to prove it wrong or to confirm it".

Since statements in hypothesis have to be put to empirical investigation, the definition of hypothesis excludes all statements which are merely opinions (e.g., aging increase ailments), value judgments (e.g., contemporary politicians are corrupt and have vested interests to serve), or normative (e.g., all people should go for a morning walk). Normative statement is a statement of what ought to be, not a factual statement that can be shown through investigation to be right or wrong.

In other words, a hypothesis carries clear implications for testing the stated relationship, i.e., it contains variables that are **measurable and specifying** how they are related. A statement that lacks variables or that does not explain how the variables are related to each other is no hypothesis in scientific sense.

6.3 RELATIONSHIP BETWEEN THEORY, FACTS AND HYPOTHESIS

Theory serves to order and give meaning to facts. Theory also gives direction to the search for facts. A hypothesis states what we are looking for.

When facts are assembled, ordered, and seen in a relationship, they constitute a theory. The theory is not speculation but is built upon fact. Now, the various facts in a theory may be logically analyzed and relationship other than those stated in the theory can be deduced. At this point there is no knowledge as to whether such deductions are correct. The formulation of the deduction,

however, constitutes a hypothesis, if verified it becomes part of a future theoretical construction. It is thus clear that the relationship between hypothesis and theory is very close. One scientist, in this connection, has stated: "In practice a theory is an elaborate hypothesis which deals with more types of facts than does the simple hypothesis."

A hypothesis looks forward. It is a proposition which can be put to test to determine its validity. It may seem contrary to, or in accord with common sense. It may prove to be correct or incorrect. In any event, however, it leads to an empirical test. Whatever the outcome, the hypothesis is a question put in such a way that an answer of some kind can be forthcoming. It is an example of the organized skepticism of science, the refusal to accept any statement without empirical verification. Every worthwhile theory then permits the formulation of additional hypothesis. These, when tested, are either proved or disapproved and in turn constitute further tests of the original theory. In either case they may be of use to existing theory and may make possible the formulation of still other hypothesis. Such a simple outline, unfortunately, fails to indicate that the formulation of useful hypothesis is one of the most difficult steps in scientific method.

- **Difficulties in formulating Hypothesis**

The hypothesis is the necessary link between theory and investigation, which leads to the discovery of additions to knowledge. According to Goode and Hatt, three main difficulties in the formulation of hypothesis are:

1. Inability to phrase the hypothesis properly.
2. Absence of clear theoretical framework or knowledge of theoretical framework, e.g., awareness of rights among women depends upon personality, environment (education and family and aspirations).
3. Lack of ability to utilize the theoretical framework logically e.g. worker's commitment and role skills and role learning.

Evaluating whether a hypothesis is good or bad depends upon the amount of information it provides about the phenomenon. E.g. let us take the following hypothesis, given in the three forms:

- (i) X is associated with Y.
- (ii) X is dependent on Y.
- (iii) As X increases Y decreases.

Of these three forms, third form explains the phenomenon better.

The following steps have to be taken to remove difficulties with the formulation of hypothesis.

- (a) Complete and perfect knowledge of the principles of sociology has to be acquired.

- (b) From the very beginning the hypothesis should be brief and timely; and
- (c) It should grow as the research proceeds further. In other words it means that hypothesis should become elaborate as one proceeds in the field of research.

6.4 TYPES OF HYPOTHESES

In social sciences, as in physical sciences, hypothesis is of different kinds.

Some of these kinds are: -

1. **Descriptive hypotheses:** These are propositions that typically state the existence, size, form or distribution of some variable. Such hypotheses enable us to grasp the phenomenon under study. But they do not yield rigorous laws e.g.
 - (i) Private brand purchasers constituted an identifiable market segment.
 - (ii) Husbands and wives agree in their perception of their respective roles of purchase decisions.
2. **Relational Hypotheses:** These explain how and why things are going on, by suggesting meaningful inter-connection between two or more objects i.e. an account for variables in terms of other variables, e.g. "High unemployment among male adults in Tamil Nadu is a function of current industrial recession".
3. **Explanatory Hypotheses:** These are relationship propositions which strongly imply or state the existence of, or a change in, one variable which causes or leads to an effect on another variable. The first variable is typically called the independent variable and the latter the dependent variable.
4. **Null Hypotheses:** This means that there is zero or no relationship. Such a hypothesis (H_0) is a straw man. It is set up so that we can demolish it. It is believed to be false. Its rejection helps us to accept its counterpart, an alternative hypothesis (H_a).

Goode and Hatt have given the following three types of hypotheses on the basis of level of abstractness.

1. Those presents proposition in common sense terms or about which some common-sense observation already exists or which seeks to test common sense statements. e.g.
 - (i) Bad parents produce bad children or
 - (ii) Committed managers always give profits etc.
2. Those are somewhat complex, i.e., which give statement of a little complex relationship, e.g.

- (i) Communal riots are caused by religious polarization.
 - (ii) Crime is caused by differential associations etc.
3. Those which are very complex, i.e., which describe relationship between two variables in more complex terms, e.g. high fertility exists more in low income, conservatives, and rural people than in high income, modern, and urban people. Here dependent variable is "fertility" while independent variables are income, values, education and residence etc. We have to keep number of variables constant to test this hypothesis. This is abstract way to handle the problem.

6.5 SOURCES OF HYPOTHESIS

1. **Cultural values of Society:** American culture, for example, emphasizes individualism, mobility, competition and equality while Indian culture emphasis tradition, collectivism, Karma and attachment. Therefore, Indian cultural values enable us to develop and test the following hypothesis:
 - (i) Residential jointness in Indian family has decreased but functional jointness continues to exist.
 - (ii) Divorce is used as a last resort by a woman to break her marriage.
 - (iii) Caste is related to voting behaviour among Indians.
2. **Past Research:** Hypotheses are often inspired by past research. e.g. a researcher studying the problem of student unrest may use the findings of another study that "students having spent two or three years in the college/ university take more interest in student's problems in the campus than fresher's" or that "students with high ability and high social status participate less in student's agitation than those who have low ability and low social status". Such hypotheses could be used either to replicate past studies or revise the hypotheses that the alleged correlation does not exist.
3. **Folk Wisdom:** Sometimes researchers get the idea of a hypothesis from commonly held lay beliefs, e.g., caste affects individual's behaviour, or that geniuses lead unhappy married life, or married woman without children are less happy, or that young illiterate marriage girls are more exploited in joint families and so on. Although social scientists are often accused of stating the obvious, social researchers who test a hypothesis based on "what everybody knows is true" often find that it is not true after all.
4. **Discussions and Conversations:** Random observations during discussions and

conversations and reflections on life as a person throw light on events and issues.

5. **Personal Experiences:** Very often researchers see evidence of some behaviour pattern in their daily lives.
6. **Intuition:** Sometimes the investigators get a feeling from inside that certain phenomena are correlated. The suspected correlation leads the investigator to hypothesize a relationship and conducts a study to see if his/her suspicions are confirmed. For example, living in a hostel for a few years gives an idea to the hostlers that lack of control leads to deviant behaviour". She/he therefore decides to study hostel sub-culture.
7. **Theory:** Hypothesis can be deduced from theory itself, i.e., theory points out the direction of research. e.g., a hypothesis may be deduced from the Frustration - Aggression Theory that can be formulated as "preventing children from reaching desired goals will result in aggressive behaviour".

6.6 CHARACTERISTICS OF A USEFUL HYPOTHESIS

Goode and Hatt have described the following characteristics of a good hypothesis:

1. It must be conceptually clear: - This means that
 - (i) Concepts should be defined lucidly,
 - (ii) These should be operationalized,
 - (iii) These should be commonly accepted, and
 - (iv) These should be communicable.
2. It should have empirical referents: This means that it should have variable which could be put to empirical test, i.e., they should not merely be moral judgments, e.g., capitalists exploit workers, or officers exploit subordinates, or young people are more radical in ideas, or efficient management leads to harmonious relations in an establishment. These hypotheses cannot be considered useful hypothesis.
3. It should be specific e.g., vertical mobility is decreasing in industries or exploitation leads to agitation.
4. It should be related to available techniques — i.e., not only the researcher should be aware of the techniques but these should be actually available. Take the hypothesis: "Change in infrastructure (means of production and relations of production) leads to change in social structure (family, religion, etc.)". Such hypothesis cannot be tested with available techniques.

5. It should be related to a body of theory.

Functions of Hypotheses

Sarantakos has pointed out the following three functions of hypotheses: -

1. To guide social research by offering directions to the structure and operation.
2. To offer a temporary answer to the research question; and
3. To facilitate statistical analysis of variables in the context of hypothesis testing.

6.7 IMPORTANCE OF HYPOTHESIS

The importance of hypothesis can also be pointed out in the following terms:

1. Hypotheses are important as tools of scientific inquiry/research because they are derived from theory or lead to theory. The relationship expressed in the hypothesis tells the researcher how to conduct inquiry, what types of data need to be collected and how are the data to be analyzed.
2. The facts in hypothesis get a chance to establish the probable truth or falsify it. A problem really cannot be scientifically solved if it is not reduced to hypotheses form because a problem is a question of a broad nature and in itself, not directly testable. One does not test the question but one tests relationship between two variables.

3. Hypotheses are tools for the advancement of knowledge as they stand apart from man's values and opinions.
4. Hypothesis helps the social scientists to suggest a theory that may explain and predict events. Though more often research proceeds from theories to hypothesis, occasionally the reverse is true.
5. Hypotheses perform a descriptive function. The tested hypothesis tells us something about the phenomenon's it is associated with. The accumulation of information as a result of hypothesis testing reduces the amount of ignorance we many have about why a social event occurs in a given way.

6.8 LET US SUM UP

So, in conclusion it can be said that a hypothesis is a tentative statement about something, the validity of which is usually unknown. It is an assumption about relations between variables. It is a tentative explanation of the research outcome or a guess about the research outcome. A hypothesis looks forward. It is a proposition which can be put to test to determine its validity. It may be seen contrary to, or in accord with common sense. It may prove to be correct or incorrect. It leads to an empirical test. The formulation of the hypothesis is a crucial step in good research, and it is important to give it a great deal of thought.

CHECK YOUR PROGRESS

Multiple Choice Questions

1. A statement made about a population for testing purpose is called?

- a) Statistic
- b) Hypothesis
- c) Level of Significance
- d) Test-Statist

2. If the assumed hypothesis is tested for rejection considering it to

be true is called?

- a) Null Hypothesis
- b) Statistical Hypothesis
- c) Simple Hypothesis
- d) Composite Hypothesis

3. A statement whose validity is tested on the basis of a sample is called?

- a) Null Hypothesis
- b) Statistical Hypothesis
- c) Simple Hypothesis
- d) Composite Hypothesis

6.9 GLOSSARY

1. Hypothesis: A hypothesis is a testable prediction or educated guess about the relationship between two or more variables, often framed as an "if-then" statement. It serves as a starting point for investigation, guiding the research process and providing a framework for analysis. A hypothesis is not a random guess; it's based on existing knowledge, observations, or preliminary data.

2. Null Hypothesis (H_0): It states that there is no relationship between the variables being studied. For example, "There is no difference in test scores between students who study in groups and those who study alone."

3. Alternative Hypothesis (H_a): It states that there is a relationship between the variables. For example, "Students who study in groups will score higher on the test than those who study alone."

4. Simple Hypothesis: It examines the relationship between one independent and one dependent variable.

5. Complex Hypothesis: It examines the relationship between two or more independent and dependent variables.

6.10 SELF ASSESSMENT QUESTIONS

1. How you define the term hypothesis.

2. Discuss various types of hypotheses in brief.

3. Write in brief about the importance of hypothesis.

6.11 LESSON END EXERCISE

- **Multiple Choice Questions**

1. Which of the following term States that there is no relationship between two population parameters?

- A) Working Hypothesis B) Null hypothesis
C) Descriptive hypothesis D) Relational Hypothesis

Answer: B

- 2.. is an abstract symbol that represents an entity, a property of an object, or a phenomenon

FACTS AND VALUES

STRUCTURE

7.0 Learning Objectives

7.1 Introduction

7.2 Definition of facts

7.2.1 Changing concept of facts and values

7.3 Basic issues

7.4 Objective facts

7.5 Types of values

7.6 Relationship between facts and research, values and research and facts and values

7.6.1 Role of Facts (Research)

7.6.2 Relationship between values and research

7.6.3 Relationship of facts and values

7.7 Let Us Sum Up

7.8 Glossary

7.9 Self-Assessment Questions

7.10 Lesson End Exercise

7.11 Answers to check your progress

7.12 Suggested Readings

7.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be familiar with:

- **Concept of facts and values in social science research**
- **Basic issues related to facts and values**
- **Relationship between facts and research, values and research and facts and values.**

7.1 INTRODUCTION

The concept of the conventional methodology of physical and natural sciences is based on the assumption of 'scientific objectivity'. There is one school of thought that social science research should use the scientific methodology of physical, natural sciences. The phenomena studied in social sciences are in no way different basically from natural/ physical phenomena. Social science research methodology may conveniently be patterned on the methodology of physical and natural sciences. The above premise has prompted the thinkers even in the early stages of evolution of social and economic systems to develop laws applicable to human behaviour and his organizations/institutions on the pattern of Natural Laws. Scientific Methodology views the phenomenon of study as an externally given and exogenously determined reality which is embodied in nature. Therefore, the phenomenon as such is not only the same in time-space domain on the one hand, but it is also independent of the observational errors on the other. The scientific methodology considers each observable phenomenon to be universal in nature. The universality makes it independent of:

- a) time domain,
- b) space domain, and
- c) Observers' domain.

It is therefore free from observers' bias. Natural/ physical phenomena exist as these are irrespective of the existence or non-existence of its observer. Thus, the truth is entrapped in nature. However, the reality/truth may be subject to

- a) observational,
- b) measurement, and
- c) Experimental/sampling errors.

The scientific methodology performs two functions:

- 1) it discovers the truth and
- 2) it facilitates the study and hence, the understanding of natural/physical world as it exists which leads to the explanation and/or forecasting by the application of laws/theories.

These laws or theories are developed on the basis of observed regularities and patterns of operations and/or changes thereof. The data associated with the operational patterns and regularities are assumed to be universal in character. Accordingly, social science theory has to be developed on the basis of understanding and then it has to be tested on the criteria of its ability to detect patterns and regularities in social processes and socio-economic changes and explain and/forecast the future changes or consequences thereof. The socio-economic phenomena/facts have to be discovered, explained and/ or forecasted objectively, if the societal/economic studies have to be bracketed with natural sciences.

In the twentieth century a group of scientists turned philosophers, known as the logical positivists, took the idea of a fact/value dichotomy even further. The positivists declared that only facts, derived from experiment and observation, could be called truth, and they rejected all talk about values (ethics, morals, religion, philosophy) not only as "preferences without foundation" but as meaningless or "non-cognitive" babble. Values were thus depreciated as mere matters of taste and as not subject to rational or objective discussion. Max Weber thought that "statement of facts is one thing and statement of values another and any confusing of the two is impermissible. He says that values are linked to heart — to subjectivity- as much as they are linked to head.

7.2 DEFINITION OF FACTS

They are the observations that we establish through sense or measurement Facts are positive (directly observable or measurable) and independent of personal judgement. Facts are not necessarily "permanent". They are not by themselves used for prediction. Facts and values need to be differentiated, but there can be facts about values.

Durkheim views social facts as "Any patterns rooted in society rather than experience of individuals". Society has an objective existence, beyond our own subjective perception of the world, e.g.: Norms, values, religious beliefs and rituals.

A *fact* is traditionally understood as a state of affairs that makes a proposition true. A proposition is defined as a thought or content expressed by a sentence, when it is used to say something true or false. For example, the sentence "Mount Everest is taller than Mount Kilimanjaro" expresses a proposition; it may be evaluated as true or false. If it is true, which it is, and then there is some state of affairs that makes it true, namely the fact that Mount Everest is taller than Mount Kilimanjaro.

A *value* is something good, or something one believes to be good. For example, freedom is one of the dominant values of modern society; and to the extent that people believe that freedom is good, they value freedom. More generally, evaluative language—also sometimes labeled 'normative' language—includes terms such as 'good', 'right', 'wrong', 'virtuous' and 'vicious'. Each of these terms has a different sphere of application: 'right' and 'wrong' are used to appraise actions or types of actions;

'virtuous' and 'vicious' appraise agents and states of their character; 'good' and 'bad' may be used to evaluate almost anything.

British Educational Research Association (BERA) guidelines "All research is influenced by the ideology of the researcher: sometimes the researcher is a major actor...It is good practice to provide a clear statement of methodological stance in terms of the values and beliefs of the researcher." (Halliday, J. (2002) Researching values in Education British Educational Research Journal 28:1)

7.2.1 Changing concept of facts and values:

Changing conception of values- often called the fact value dichotomy is the belief that fact is one thing and the value another. The fact/value dichotomy is a doctrine that arose out of a supreme attempt at concept control. Beginning in the eighteenth century, some of the Enlightenment thinkers declared that values (such as moral obligations) could not be derived from facts. Howard Kandler says, "The naturalistic fallacy rejects the possibility of deducing ethical statements from non-ethical statements. This principle, more precisely described as the fact/value dichotomy, denies the possibility of logically deriving what ought to be from what is. "The distinction between fact and value has been around for decades but the evaluation community inherited through the positivists and their influence on social science. The logical positivists thought the facts could be ascertained and only facts were the fit subject of science, along with analytical statements that were true by definition such as $1+1=2$. Facts were empirical and could be based upon observation, a position called foundationalism. Values

Values were something else-emotions, feelings- possibly useless metaphysical entities. Whatever they were, they were not subject to scientific analysis. Rational discussion had little to do with them. The role of scientists was to determine facts. A counter view was 'No foundationalism' which stated that knowledge is still possible because although one cannot compare facts to a pristine observation to determine whether it is true or not, one can compare fact to the body of knowledge to which it relates. Occasionally, the body of knowledge has to change to accommodate facts.

7.3 THE BASIC ISSUE

1. Positivist assumptions:

- Objective knowledge (facts) can be gained from direct experience or observation, and is the only knowledge available to science. Invisible or theoretical entities are rejected.
- Science separates facts from values; it is 'value-free'.
- Science is largely based on quantitative data, derived from the use of strict rules and procedures, fundamentally different from common sense.

- All scientific propositions are founded on facts. Hypotheses are tested against these facts.

1.1 Philosophical critiques of positivist assumptions

- Doubts about the claim that direct experience can provide a sound basis for scientific knowledge.
- Rejection of the view that science should deal only with observable phenomena.
- Impossibility of distinguishing between the language of observation and of theory.
- Theoretical concepts do not have a 1:1 correspondence with 'reality' as it is observed.
- Scientific laws are not based on constant conjunctions between events in the world.
- 'Facts' and 'values' cannot be separated.

1.2 A realist view of science

- There is no unquestionable foundation for science, no 'facts' that are beyond dispute. Knowledge is a social and historical product. 'Facts' are theory-laden.
- The task of science is to invent theories to explain the real world, and to test these theories by rational criteria.
- Explanation is concerned with how mechanisms produce events. The guiding metaphors are of structures and mechanisms in reality rather than phenomena and events.
- A law is the characteristic pattern of activity or tendency of a mechanism. Laws are statements about the things that are 'really' happening, the ongoing ways of acting of independently existing things, which may not be expressed at the level of events.
- The real world is not only very complex but also stratified into different layers. Social reality incorporates individual, group and institutional, and societal levels.
- The conception of causation is one in which entities act as a function of their basic structure.

- Explanation is showing how some event has occurred in a particular case. Events are to be explained even when they cannot be predicted.

7.4 OBJECTIVE FACTS

The term "fact" refers to a truth about the world, a statement about some aspect of objective reality. For example, there is a fact that can be given as an answer to each of the following questions:

What is the average flow rate of the Ganga River?

When taken into custody, what was the suspect's blood-alcohol level? Is the global warming trend natural or the result of pollution?

An accurate answer to any one of these questions is a matter of fact. A wrong answer, whether the result of a mistake or a lie, would not be a fact. A fact does not depend on who believes it or who presents it. A fact simply is.

The most useful kinds of facts are those that can be verified by others. By performing a scientific experiment or a thorough investigation, we can become convinced that a claim is an authentic fact. Facts exist at every point on the spectrum between what is knowable and what is unknowable, and these changes over time - some things that we cannot know today may be within our grasp at some point in the future.

CHECK YOUR PROGRESS - I

NOTE: - **Write your answers in the space given below.**

A) Tick the right choice: -

a) A _____ is something good, or something one believes to be good:

- i) value ii) Facts

b) Science separates facts from values; it is 'value-free':

- i) Positivist assumption ii) A realist views of science.

B) Answer the following questions

a) Define facts and values.

b) Write basic issues in facts and values.

7.5 TYPES OF VALUES

- **Subjective Values**

Values, as opposed to facts, have a clearly subjective element. They vary from person to person and from situation to situation. For example, a value judgment is called upon to answer each of the following questions:

Should we have a moment of prayer in our school? Is it appropriate to work on religious holidays?

The answers to these questions are both subjective, in that each of us likely has our own opinion, and relative, in that they may be answered in different ways in different contexts. Questions that call for value judgments are not susceptible to matter-of-fact answers. We expect people to have different personal opinions on such matters. Though you and I may argue over a value judgment, we are likely at some point to accept whatever differences we may have. We also tend to accept the fact that people

with differing cultural backgrounds and/or religious views will have different sets of values. Members of a cultural or religious group expect similar values of other members, but do not expect these values to be found in non-members.

- **Objective Values**

The situation becomes more complicated for other kinds of value judgments - specifically, moral ones. Offering a moral judgment can resemble offering a fact in that it is an attempt to describe objective reality instead of merely stating a preference or opinion. For example, consider the following statements:

Killing, except in self-defense, is wrong.

If you make a promise to someone, you should keep it.

It is important to be tolerant of others of different races and ethnic backgrounds. These kinds of claims fall under the category of ethics and morality but making a moral statement goes beyond offering an opinion. For example, if I say killing is wrong, I don't mean that as my opinion, I mean that as if it were a fact. I also may not mean it to be relative to just me or my social group, instead meaning it is wrong for anyone, anywhere. In this way, ethical statements try to express something that is supposed to be objectively true.

Just because moral claims are sometimes offered as fact doesn't mean that they really are. Some feel that all values, including moral ones, are merely matters of opinion and preference, relative to the person and their culture. For example, some of the most notorious and brutal criminals have attempted to justify their actions, suggesting that they actually did "the right thing."

7.6 RELATIONSHIP BETWEEN FACT AND RESEARCH

7.6.1 Role of Facts (Research)

Theory and fact are in constant interaction. Developments in one may lead to developments in the other. Theory, implicit or explicit, is basic to knowledge and even perception. Theory is not merely a passive element. It plays an active role in the uncovering of facts. We should expect that "fact" has an equally significant part to play in the development of theory. Science actually depends upon a continuous stimulation of fact by theory and of theory by fact.

1. **Facts initiate theory.** Many of the human-interest stories in the history of science describe how a striking fact, sometimes stumbled upon, led to important theories. This is what the public thinks of as a "discovery." Examples may be taken from many sciences: accidental finding that the penicillium fungus inhibits bacterial growth; many errors in reading, speaking, or seeing are not accidental but have deep and systematic causes. Many of these stories take an added drama in the retelling, but they express a fundamental fact in the growth of science, that an apparently simple observation may lead to significant theory.
2. **Facts lead to the rejection and reformulation of existing theory.** Facts do not completely determine theory, since many possible theories can be developed to take account of a specific set of observation. Nevertheless, facts are the more stubborn of the two. Any theory must adjust to facts and is rejected or reformulated if they cannot be fitted into its structure. Since research is continuing activity, rejection and reformulation are likely to be going on simultaneously. Observations are gradually accumulated which seem to cast doubt upon existing theory. While new tests are being planned, new formulations of theory are developed which might fit these new facts.
3. **Facts redefine and clarify theory.** Usually the scientist has investigated his/her problem for a long time prior to actual field or laboratory test and is not surprised by his/her results. It is rare that he/she finds a fact that simply does not fit prior theory. New facts that fit the theory will always redefine the theory, for they state in detail what the theory states in very general terms. They clarify that theory, for they throw further light upon its concepts.

7.6.2 Relationship between values and research

There are two aspects of this relationship:

- Values of the researcher
- Values of the researched

Morwenna Griffiths (1998) acknowledges that "set of values guide decisions about what is researched and how and why". Halliday comments that far from this meaning the research is biased

and suspects the research it is improved-but admits that initial opinions, including beliefs and values have to be acknowledged. Although responsible stakeholders will seek facts to help identify an issue, facts alone may not provide completely reliable indicators of reality. Facts alone are insufficient to help identify an issue when they are:

- over generalized to the point that they do not accurately reflect a specific situation,
- based on faulty analysis and/or data,
- biased in support of a political agenda,
- miscommunicated by the researchers,
- misrepresented by public media,
- misinterpreted by the listeners,
- out of date, and/or unrelated to the problem at hand.

Sociologists need a thorough understanding of the relationship between values and science. A broad value problem of concern to all sciences is posed by the spectacular destructiveness caused by some of the applications of modern science. Of a somewhat different order are the two areas of interaction of values and science that are of particular interest to sociologists:

1. The fact that the subject matter of sociology is values
2. The fact that moral involvement with the subject matter may tempt the social scientists rather more than the physical scientist to bias the results in favour of own values.

There is a need for systematic treatment of relationships between values and both science and the scientist. Science itself rests upon a series of postulates or assumptions which are themselves fundamentally unproved and unprovable. They represent those areas in the philosophy of science which is usually called epistemology. Some of the nonscientific bases of science are:

- The world exists
- We can know the world
- We can know the world through our senses
- Phenomena are related causally

The foregoing statements are fundamental postulates of science. They are not provable, but they are true because we wish them to be true. In this sense science itself is founded upon evaluative assertions.

7.6.3 Relationship of facts and values:

1. **Values are deeply involved in the arena of facts:** The practice of science involves much more than the compilation of self-evident facts. Definitions of "true," "fact," "observation" and the like are derived from philosophical considerations, from the epistemology of science, and these "considerations" involve values. The entire operational structure of science—and of all knowledge production—involves the use of standards, which is another term for values.
2. **Values are involved in the identification or determination of what is a fact:** Values inform the process and methodology of fact discovery. At the simplest level, values influence which experiments will be performed and which will not. The facts which might result from an experiment will not exist—that is, not be apparent—if that experiment is not performed in the first place. Facts are not found in places where they are not sought. Some facts are the result of observation, experiment or discovery, or even counting. These facts are taken to be self-evident. Other facts, however, are the result of interpretation.
3. **Values are involved in the examination and description of fact:** The determination of what is or is not to be considered a fact is often influenced by theoretical or other value-laden concerns. We may now state further that even the act of describing or labeling—choosing an appropriate word to describe a fact—is often inextricably connected to value concerns.
4. **Values are intermixed in many statements of fact:** In both scientific and everyday use, many statements of fact include both an empirical component and an evaluative component without rendering the statement "non-factual" or "subjective." Examples of phrases with "both normative and factual content" might be "a good result," "a promising finding," "a worthwhile experiment," or even "an anomalous result."
5. **Values can be reasoned about:** Proponents of the fact/value dichotomy attempt to denigrate values as mere personal preferences that are beyond rational discussion. If disagreements about moral, ethical, and other values are the equivalent of arguing over which flavor of ice cream is better, then such discussion is pointless.
6. **Some values are objective:** Another error created by the fact/value dichotomy is the view that facts and values are separated into the two categories of objective and subjective. That is, the implication of the separation of facts and values is that all facts are objective and all values are subjective. This claim is false. Some values are objective. The positivists tended to see as objective only those statements that were empirically verifiable through some experiment, and considered all non-empirical statements "subjective."

7.8 GLOSSARY

- **Facts:** Facts are empirical observations about the world. They are considered objective, meaning they can be verified through evidence and are not based on personal opinions or beliefs. Examples include scientific facts like "water is made of hydrogen and oxygen" or historical facts like "the French Revolution occurred in 1789".
- **Values:** Values, on the other hand, are subjective beliefs about what is right, wrong, good, or bad. These are often shaped by culture, personal experiences, and moral frameworks. Examples include beliefs about social justice, environmental protection, or the importance of family.
- **Propositions:** In research, a proposition is a declarative statement that suggests a potential relationship between two or more concepts or variables. It's a foundational element in scientific inquiry, often serving as a stepping stone to formulating testable hypotheses. Propositions are typically derived from theories, existing literature, or observations, and they help researchers explore new areas or clarify relationships where knowledge is limited.

7.9 SELF ASSESSMENT QUESTIONS

1. What do you understand by term Facts and Values.

2. What are the basic issues related to Facts and Values.

3. Write down briefly the types of Values.

4. Write down the relationship between facts and values.

7.10 LESSON END EXERCISE

- **Multiple Choice Questions**

1. What is the expansion of APA?

- A) Autonomous Physical Association
- B) American Physiological Authority
- C) American Psychological Association
- D) Anthropological physiological authority

Answer: C

2. Who defined “Research is a systematic, controlled, empirical and critical investigation of hypothetical relations among natural phenomena?”

- A) Kerlinger
- B) Howard S Becker
- C) Perter Blau
- D) Kingsley Davis

Answer: A

3. Discovery, definition, and experimentation is the sequential process of?

- A) Applied research
- B) Exploratory research
- C) Action research
- D) Descriptive research

Answer: B

4. The functions of social science research are?

- A) Prediction
- B) Diagnosis of problems and their analysis
- C) Development of planning
- D) All of the above

SCIENCE AND SCIENTIFIC METHODS

STRUCTURE

- 8.0 Learning Objectives**
- 8.1 Introduction**
- 8.2 Definition of Science**
- 8.3 Characteristics of Science**
- 8.4 Scientific research**
 - 8.4.1 Objectives of research**
 - 8.4.2 Aims of social research**
 - 8.4.3 Characteristics of research**
 - 8.4.4 Significance of research**
- 8.5 Ways of knowing about behavior**
- 8.6 Scientific methods in research**
 - 8.6.1 Assumptions underlying research**
 - 8.6.2 Characteristics of research by scientific methods.**
- 8.7 Types of scientific research**
- 8.8 Let Us Sum Up**
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- 8.10 Self-Assessment Questions**
- 8.11 Lesson End Exercise**
- 8.12 Answers to check your progress**
- 8.13 Suggested Readings**

8.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- **Understand the basic concept of science and scientific methodology**
- **Consider ways of knowing and types of knowledge and research**
- **Know the research process and the philosophy guiding the methodology.**

8.1 INTRODUCTION

This chapter deals with explaining the concept of science and scientific methods. As to understand the human nature we must have the knowledge of science and scientific research. This chapter will also enable the students to know the research process, Characteristics of research, aims of scientific research, the ways to know the behaviour.

8.2 DEFINITION OF SCIENCE

To understand complex human activity, we must grasp the language and approach of individuals who pursue it. It is done with the understanding of science and scientific research. Science is different from common sense in following five ways:

1. **Use of conceptual schemes:** Though conceptual schemes are used in both science and common sense, the layman uses it in a loose fashion while the scientist systematically builds his conceptual and theoretical structures, and tests them for consistency.
2. **Empirical tests:** The scientist tests his hypotheses and theories through a systematic empirical testing but the man in streets test his so-called hypotheses and theories in a selective way.
3. **Notion of control:** In scientific research 'control' means focusing on those variables that are hypotheses to be the 'causes' and ruling out those that are possible causes of the effects on the phenomena under study. The layman seldom bothers with this methodology.
4. **Relations and phenomena:** Scientists consciously and systematically pursues relations; the layman does not do this.
5. **Explanation of observed phenomena:** Scientist carefully rules out philosophical and metaphysical explanation in explaining relations among

observed phenomena because these cannot be tested. The method of science is different from the methods of a layman's analysis.

- **What is science?**

Science is a badly misunderstood word. It is either equated with intellectuals, laboratories or engineering and technology. There are two views of science: the static view, is that science is an activity that contributes systematized information to the world; the dynamic view, it regards science as an activity, often called the heuristic view, meaning serving to discover, reveal or self-discovery. It is this heuristic view which distinguishes science from engineering and technology. The basic aim of science is theory, which explains the natural phenomena.

8.3 CHARACTERISTICS OF SCIENCE

1. **Science is empirical:** The scientific attitude is to rely on experience more than on authority, common sense or even logic.
2. **Science is objective:** Science is based on objective observations, made in such a way that any person having normal perception and being in the same place at the same time would arrive at the same observation.
3. **Science is self-correcting:** New evidence is as constantly being discovered that contradicts previous knowledge and science is characterized by willingness to let new evidence correct previous beliefs.
4. **Science is progressive:** Comparison of science text books over the years shows remarkable progress in the amount and quality of knowledge.
5. **Science is tentative:** Science never claims to have the whole truth because we try to progress increasingly near the truth through enquiry.
6. **Science is parsimonious:** The principle of parsimony holds that we should use the simplest explanations possible to account for given phenomenon. This principle of parsimony was advocated by William of Ockham, a philosopher who lived in 14th century and it came to be known as 'Occam's razor'.
7. **Science is concerned with theory:** One of the major concerns of science is development of a theory of how something works.

8.4 SCIENTIFIC RESEARCH

Science is the organized accumulation of systematic [reliable] knowledge for the purpose of intelligent explanation/prediction. Science is systematic inquiry. It is not a static or unchanging entity. Its intended purpose is explanation / prediction; science is especially concerned with conditional prediction i.e. "if X, Y, and Z occur, W will follow "Research and Science are mutually interdependent

- Science is accumulated, reliable knowledge.
- Research is a process through which science is expanded and tested for validity.

Science does not consist of "factual truth", devoid of human values or personal views. Science is inherently a social enterprise and scientific knowledge is shaped by human values, limitations, and social contexts Personal beliefs can affect scientific judgment and people are fallible. Scientists should not blindly accept (or reject) ideas, observations or concepts. Horton and Hunt (1984) have given the following characteristics of scientific research:

1. **Verifiable evidence:** factual observations which observers can see and check.
2. **Accuracy:** It means truth or correctness of a statement or describing things exactly as they are.
3. **Precision:** It as exacts as necessary, avoiding colorful literature and vague meanings.
4. **Systematization:** Attempting to find all relevant data or collecting it systematically.
5. **Objectivity:** Being free from biases and vested interests.
6. **Recording:** Jotting down complete details as quickly as possible, with precision, without bias.
7. **Controlling conditions:** Controlling all variables except the one and then attempting to examine what happens when the variable is varied.
8. **Training the investigators** to look for facts, understand, record and interpret it, avoid inaccurate data collection.

What is research?

1. A voyage of discovery; a journey; an attitude; an experience; a method of critical thinking; a careful critical enquiry in seeking facts for principles.

2. An art of scientific investigation.
3. A systematized effort to gain new knowledge; a movement from known to unknown.
4. An activity caused by instinct and inquisitiveness to gain fresh insight / find answers to questions / acquires knowledge.

RESEARCH: - is an endeavor in search of knowledge. It is a scientific and systematic search for information. Oxford Encyclopedia English Dictionary defines research as:

- a) The systematic investigation into the study of materials, sources etc. in order to establish facts and reach new conclusions.
- b) An endeavor to discover or collate old facts etc. by the scientific study of a subject or by a course of critical investigation.

Leedy defines it from more utilitarian point of view: Research is a procedure by which we attempt to find systematically and with the support of demonstrable facts, the answer to a question or the resolution of a problem.

Kerlinger uses more technical language to define it, "The systematic, controlled, empirical and critical investigation of hypothetical propositions about presumed relations among natural phenomenon.

Some people consider research as a movement from the known to the unknown. According to Clifford Woody, 'Research comprises defining and redefining problems, formulating hypothesis or suggested solutions; collecting, organizing and evaluating data; making deductions and reaching conclusions; and at last, carefully testing the conclusions to determine whether they fit the formulating hypothesis.

D. Slesinger and M. Stephenson in the encyclopedia of social sciences defines research as "The manipulation of things, concepts, or symbols for the purpose of generalizing to extend, correct or verify knowledge aids in construction of theory or in the practice of an art".

8.4.1 Objectives of Research

The objectives of research have been clearly brought out in the definitions provided above. They are:

- a) To gain familiarity with a phenomenon or to achieve new insight into it.
- b) To portray accurately the characteristics of a particular individual, situation or a group.
- c) To determine the frequency with which something occurs or with which it is associated with something else.

- d) To test hypothesis of a causal relationship between variables.

8.4.2 Aims of social research:

1. To understand the functioning of the society
2. To study individual behavior and social action
3. To evaluate social problems and their effect on society
4. To explore social reality and explain social life
5. To develop theories.

Following goals have also been identified:

1. General goals: Understanding for its own sake.
2. Theoretical goals: Verification, falsification, modification or discovery of a theory.
3. Pragmatic goals: Solution of social problems.
4. Political Goals: Development of social policy, evaluation of programmes, planning of reconstruction, empowerment and liberation.

8.4.3 Characteristics of research: -

1. Gaining experience in an uncontrolled and haphazard activity, while research is systematic and controlled.
2. Reasoning can operate in an abstract world, divorced from reality, while research is empirical and turns to experience and the world around us for validation.
3. Unlike experience and reason, research aims to be self-correcting. The process of research involves vigorously testing the results obtained and methods and results are open to public scrutiny and criticism.

8.4.4 Significance of research:

“All progress is born of inquiry. Doubt is often better than overconfidence, for it leads to inquiry and inquiry leads to investigation is a famous Hudson Maxim in context of which significance of research is well understood”.

1. Research inculcates scientific and inductive thinking and it promotes the development of logical habits of thinking and organization.

2. Research has become an aid to governmental and business policy making.
3. It has a special significance in solving various operations and planning problems of business and industry.
4. It is equally important for social scientists in studying social relationships and in seeking answers to various social problems.
5. For students as an avenue of knowledge seeking and career.
6. To professionals for who it is a source of livelihood.
7. To philosophers and thinkers for whom it may mean new ideas, insight and themes.
8. To literary persons for development of new styles and creative work.

Thus, research is a sort of formal training which enables one to understand the new developments in one's field in a better way.

CHECK YOUR PROGRESS - I

NOTE: Write your answers in the space given below.

-

Tick the right choice: -

- a) Who said, "Research is a procedure by which we attempt to find systematically and with the support of demonstrable facts, the answer to a question or the resolution of a problem":
 - i) Leedy
 - ii) Fred N. Kerlinger
- b) Attempting to find all relevant data or collecting it systematically:
 - i) Systematization
 - ii) Objectivity

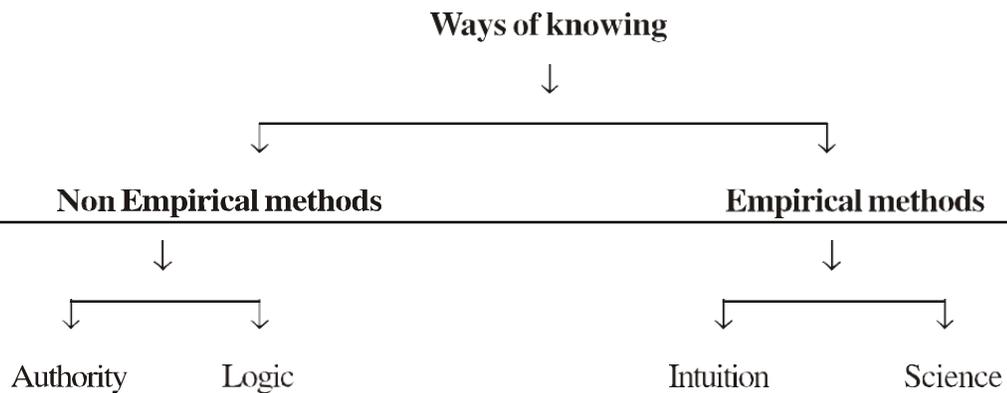
B) Answer the following questions

- a) Define science.

- b) Write the significance of research (any three).

8.5 WAYS OF KNOWING ABOUT BEHAVIOR

There is more than one way to learn about human and animal behavior. These can be divided into two broad categories: -



a) Non-Empirical Method: -

- i) **Authority:** we may believe something because some respected persons told us it is true. Religion is an authority. History of science is in large part a struggle for intellectual freedom from the dogmas of authority.
- ii) **Logic:** Take the following set of statements: -

$$A=B \quad B=C$$

$$\text{Deduction} \quad C = A$$

This is a logical deduction but logic alone cannot tell you which world actually exists.

b) Empirical Method:

- i) **Intuition:** It is spontaneous perception or judgment not based on reasoned mental steps. For e.g.: - After meeting someone for a few minutes only you get some 'vibes' from the person which you term as 'Positive' or 'negative' and these shapes your decision about that person. Common sense is also a term of intuition.
- ii) **Science:** - It is a way of obtaining knowledge by means of objective

observations.

8.6 SCIENTIFIC METHODS IN RESEARCH

Scientific method is the discipline which forms the foundation of modern scientific enquiry. Scientific methods have been applied to research in areas principally not through of as scientific such as sociology, psychology and education.

8.6.1 Assumptions underlying scientific methods:

According to Cohen and Manion, "There are five major assumptions underlying scientific methods: -

- i) Order
 - ii) External reality
 - iii) Reliability
 - iv) Parsimony
 - v) Generality
- i) **Order:** It is a belief that there is some kind of order in the universe and that it is possible for us to gain some understanding of this order. This is linked to the idea of determinism, the assumption the events have causes, and that the link between events and causes can be revealed.
- ii) **External reality:** There must be agreement between the people that external reality exists and that people recognize the same reality, a public or shared reality. Scientific enquiry relies on the acceptance of the reliability of knowledge gained by experience to provide empirical evidence to support or refute its theories.
- iii) **Reliability:** Researchers depend on their senses to record and measures their work reliability. Reasoning and memory play an important role in it.
- iv) **Parsimony:** Phenomenon should be explained in as economic manner as possible.
- v) **Generality:** This is the assumption that there can be valid relationships between the particular cases investigated by the researcher and the general situation in the world at large.

8.6.2 Characteristics of research by scientific method: -

1. It is generated by a question: - A questioning mind is the precondition for research.

Such questions are referred to as research problem.

2. It necessitates clarification of goals: - known as objectives
3. It entails a specific program of work: - known as methodology.
4. It is aimed at increasing understanding by interpreting facts or ideas and reading same conclusions about their meanings.
5. It required reasoned arguments to support conclusions.
6. It is reiterative in its activities.

8.7 TYPES OF SCIENTIFIC RESEARCH

- Quantitative Vs Qualitative research.
- Descriptive Vs Explanatory Vs Predictive research.
- Basic (pure) Vs applied research.

1. Quantitative research:

It seeks to convert observations to numbers. Testing of hypotheses is based on a sample of observations, and a statistical analysis of the data. It attempts to describe relationships among variables mathematically. Often describe variables, examine relationships among variables, and determines cause-and-effect interactions between variables.

2. Qualitative research: Emphasizes verbal descriptions and explanations off human behavior. The tools for gaining information include: participant observation,, in- depth interviews,, or an in-depth analysis of a single case.

3. Descriptive research (Exploratory research): Emphasizes the accurate description of some aspect of society. A researcher assesses specific characteristics of individuals, groups, situations, or events by summarizing the commonalities found in discrete observations. The descriptive research its directed toward studying "what" and how many of this "what". Thus, it its directed toward answering questions such as "What is this"?

4. Explanatory research: Its primary goal is to understand or explain relationships. It uses correlations to study relationships between dimensions or characteristics of individuals, groups, situations or events. It explains how the parts of phenomena are related to each other. It asks "why" questions.

5.Predictive research: It moves beyond explanation to the prediction of precise relationships between dimensions or characteristics of a phenomenon or differences between groups.

6.Basic Research: It is concerned with understanding social world or with developing hypotheses and theories. The information is collected to the base of knowledge. It is also called pure research.

7.Applied Research: It is concerned with the ways of using scientific knowledge to solve the problems. It focuses on solving social and real-life problems.

CHECK YOUR PROGRESS - II

NOTE: - Write your answers in the space given below.

A) Tick the right choice: -

- a) It focuses on solving social and real-life problems
i) Predictive Research ii) Applied Research.
- b) Phenomenon should be explained in as economic manner as possible:
i) Parsimony ii) External reality

B) Answer the following questions

- a) Write the various ways of knowing about behaviour.

- b) Define Descriptive Research.

8.8 LET US SUM UP

In short, we can conclude that science is inherently a social enterprise and scientific knowledge is shaped by human values, limitations, and social contexts. Personal beliefs can affect scientific judgment and people are fallible. Scientists should not blindly accept (or reject) ideas, observations or concepts. Research is an endeavor in search of knowledge. It is a scientific and systematic search for information. Research is a sort of formal training which enables one to understand the new developments in one's field in a better way.

8.9 GLOSSARY

- 1. Scientific Research:** It is a systematic process of investigation that uses the scientific method to discover new knowledge, validate existing theories, or develop new technologies. It involves observation, experimentation, and analysis to understand the world around us and solve complex problems.
- 2. Scientific Method:** Scientific research is rooted in the scientific method, which is a structured approach to inquiry involving observation, hypothesis formation, experimentation, data analysis, and conclusion.
- 3. Systematic Investigation:** It's not just random exploration; scientific research follows a defined process to ensure reliability and validity of findings.
- 4. Science:** The systematic study of the structure and behaviour of the physical and natural world through observation, experimentation, and the testing of theories against the evidence obtained.

8.10 SELF ASSESSMENT QUESTIONS

1 What do you understand by term Science and Scientific Research.

2. What are the various aims of social research.

3. Write down the types of scientific research.

4. Write down the Characteristics of research by scientific method.

8.11 LESSON END EXERCISE

- **Multiple Choice Questions**

1. Which of the following is research based on a deductive approach?

- A) Historical approach
- B) Quantitative research
- C) Qualitative approach
- D) Quantitative and qualitative approach

Answer: B

2. Subjective evaluation is the central characteristics of?

- A) Quantitative research
- B) Qualitative research
- C) Analytical study
- D) Experimental research

Answer: B

8.12 ANSWERS TO CHECK YOUR PROGRESS

**Answer: I A: I Leedy II Systematization
II Applied Research, Parsimony**

8.13 SUGGESTED READINGS

- Ahuja, Ram. (2009). Research Methods. Rawat Publications. Jaipur.
- Kerlinger, Fredn. (1983). Foundation of Behavioural Research, (2nd Edition).
- Kothari, C.R. (2004). Research Methodology Methods and Techniques (2nd Revised Edition), New Age International Publishers.

SURVEY TECHNIQUES

STRUCTURE

- 9.0 Learning Objectives**
- 9.1 Introduction**
- 9.2 Meaning of Surveys in Research**
- 9.3 Types of Surveys**
- 9.4 Steps in Survey Project**
- 9.5 Let Us Sum Up**
- 9.6 Glossary**
- 9.7 Self-Assessment Questions**
- 9.8 Lesson End Exercise**
- 9.9 Answers Key**
- 9.10 Suggested Readings**

9.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- **Explain the meaning of survey**
- **Know various types of surveys**
- **Explore various survey project**

9.1 INTRODUCTION

The survey is a non-experimental, descriptive research method. Survey can be useful when a researcher wants to collect data on phenomena that cannot be directly observed (such as opinions on library services). Surveys are used extensively in library and information science to assess attitudes and characteristics of a wide range of subjects, from the quality of user-system interfaces to library user reading habits. In a survey, researchers sample a population. Basha and Harter (1980) state that “a population is any set of persons or objects that possesses at least one common characteristic.” Examples of populations that might be studied are 1) all 1999 graduate of GSLIS at the University of Texas, or 2) at the users of UT General Libraries. Since populations can be quite large, researchers directly question only a sample (i.e. a small proportion) of the population.

9.2 Meaning of Surveys in Research

In research, a survey is a data collection method involving asking questions to a sample of individuals to gather information about their opinions, attitudes, behaviors, or characteristics. It's a versatile tool used across various fields, including social sciences, market research, and public opinion studies, to gather insights from a target population. Surveys can be conducted through questionnaires, interviews, or online platforms, and they can be quantitative, qualitative, or mixed-methods.

Here's a more detailed explanation:

- **Purpose:**

Surveys aim to collect data from a sample of individuals to understand the characteristics, opinions, or behaviors of a larger population.

- **Methods:**

Surveys can be administered through various methods, including:

- **Questionnaires:** A set of written questions, often with pre-defined answer options, that can be distributed online or in paper format.
- **Interviews:** One-on-one conversations with respondents, either in person or over the phone, to gather more in-depth information.
- **Online surveys:** Surveys distributed via the internet, often using platforms like Qualtrics or SurveyMonkey, which can reach a large and diverse audience.
- **Mixed-mode surveys:** Combining different survey methods, such as using both questionnaires and interviews, to gather a more comprehensive understanding.

- **Types of Data:**

Surveys can gather both quantitative (numerical) data, using rating scales or multiple-choice questions, and qualitative (descriptive) data, using open-ended questions that allow for detailed responses.

- **Applications:**

Survey research is used in a wide range of fields, including:

- **Social sciences:** Understanding social phenomena, public opinion, and social trends.
- **Market research:** Gaining insights into consumer preferences, buying behavior, and brand perception.
- **Public health:** Assessing health behaviors, knowledge, and attitudes related to health issues.
- **Education:** Evaluating student learning, teacher effectiveness, and school climate.
- **Business:** Gathering customer feedback, assessing employee satisfaction, and evaluating product performance.
- **Key Considerations:**

When designing and conducting a survey, researchers need to consider factors like:

- **Sample selection:** Choosing a representative sample that accurately reflects the population of interest.
- **Question wording:** Ensuring questions are clear, unambiguous, and unbiased.
- **Survey length and design:** Making the survey engaging and easy to complete to maximize response rates.
- **Ethical considerations:** Ensuring informed consent, confidentiality, and anonymity of participants.

9.3 TYPES OF SURVEYS

Data are usually collected through the use of questionnaires, although sometimes researchers directly interview subjects. Surveys can use qualitative (e.g. ask open-ended questions) or quantitative (e.g. use forced-choice questions) measures. There are two basic types of surveys: cross-sectional surveys and longitudinal surveys. Much of the following information was taken from an excellent book on the project, called Survey Research Methods, by Earl R. Babbie.

- a) **Cross-Sectional Surveys:** Cross-sectional surveys are used to gather information on a population at a single point in time. An example of a cross-sectional survey would be a

questionnaire that collects data on how parents feel about Internet filtering, as of March of 1999. A different cross-sectional survey questionnaire might try to determine the relationship between two factors, like religiousness of parents and view on Internet filtering.

- b) **Longitudinal Surveys:** Longitudinal surveys gather data over a period of time. The researcher may then analyze changes in the population and attempt to describe and/or explain them. The three main types of longitudinal surveys are trend studies, cohort studies, and panel studies.
- c) **Trend Studies:** Trend studies focus on a particular population, which is sampled and scrutinized repeatedly. While samples are of the same populations, they are typically not composed of the same people. Trend studies, since they may be conducted over a long period of time, do not have to be conducted by just one researcher or research project. A researcher may combine data from several studies of the same population in order to show a trend. An example of a trend study would be a yearly survey of librarians asking about the percentage of reference questions answered using the Internet.
- d) **Cohort Studies:** Cohort studies also focus on a particular population sampled and studied more than once. But cohort studies have a different focus. For example, a sample of 1999 graduates of GSLIS at the University of Texas could be questioned regarding their attitudes towards Para professionals in libraries. Five years later, the researcher could question another sample of 1999 graduates, and study any changes in attitude. A cohort study would sample class, every time. If the researcher studied the class of 2004 five years later, it would be trend study, not a cohort study.
- e) **Panel Studies:** Panel studies allow the researcher to find out why changes in the population are occurring, since they use the same sample of people every time. That sample is called a panel. A researcher could, for example, select a sample of UT graduate students, and ask them questions on their library usage. Every year thereafter, the researcher would contact the same people, and ask them similar questions, and ask those the reasons for any changes in their habits. Panel studies, while they can yield extremely specific and useful explanations, can be difficult to conduct. They tend to be expensive, they take a lot of time, and they suffer from attrition rates. Attrition is what occurs when people drop out of the study.
- f) **Instrument Design** One criticism of library surveys is that they are often poorly designed and administered (Busha and Harter 1980), resulting in data that is not very accurate, but that is energetically quoted and used to make important decisions. Surveys should be just as rigorously designed and administered as any other research method. Meyer (1998) has identified five preliminary steps that should be taken when embarking upon any research project: 1) choose a topic, 2) review the literature, 3) determine the research question, 4)

develop a hypothesis, and 5) operationalization (i.e., figure out how to accurately measure the factors you wish to measure). For research using surveys, two additional considerations are of prime importance: representative sampling and question design. Much of the following information was taken from the book *Research Methods in Librarianship: Techniques and Interpretation* by Charles H. Busha and Stephen P. Harter.

- g) **Representative Sampling:** A sample is representative when it is an accurate proportional representation of the population under study. If you want to study the attitudes of UT students regarding library services, it would not be enough to interview every 100th person who walked into the library. That technique would only measure the attitudes of UT students who use the library, not those who do not. In addition, it would only measure the attitudes of UT students who happened to use the library during the time you were collecting data. Therefore, the sample would not be very representative of UT students in general.

In order to be a truly representative sample, every student at UT would have to have had an equal chance of being chosen to participate in the survey, this is called randomization.

If you stood in front of the student union and walked up to students, asking them question, you still would not have a random sample. You would only be questioning students who happened to come to campus that day, and further, those that happened to walk past the student union. Those students who never walk that way would have had no chance of being questioned. In addition, you might unintentionally be biased as to who you question. You might unconsciously choose not to question students who look preoccupied or busy, or students who don't look like friendly people. This would invalidate your results, since your sample would not be randomly selected.

If you took list of UT students, uploaded it onto a computer, and then instructed the computer to randomly generate a list of 2 percent of all UT students, then your sample still might not be representative. What if, purely by chance, the computer did not include the correct proportion of seniors, or honors students, or graduate students? In order to further ensure that the sample is truly representative of the population, you might want to use a sampling technique called stratification. In order to stratify a population, you need to decide what sub-categories of the population might be statistically significant. For instance, graduate students as a group probably have deferent opinions than undergraduates regarding library usage to, they should be recognized as separate strata of the population. Once you have a list of the different strata, along with their respective percentages, you could instruct the computer to again randomly select students, this time taking care that a certain percentage are graduate students, a certain percentage are honors students, and a certain percentage are seniors. You would then come up with a more truly representative sample.

h) Question Design: It is important to design questions very carefully. A poorly designed questionnaire renders results meaningless. There are many factors to consider. Babbie gives the following pointers:

- Make items clear (don't assume the person you are questioning knows the terms you are using).
- Avoid double-barreled questions (make sure the question asks only one clear thing).
- Respondent must be competent to answer (don't ask questions that the respondent won't accurately be able to answer).
- Questions should be relevant (don't ask questions on topics that respondents don't care about or haven't thought about).
- Short items are best (so that they may be read, understood and answered quickly).
- Avoid negative items (if you ask whether librarians should not be paid more, it will confuse respondents).
- Avoid biased items and terms (be sensitive to the effect of your wording on respondents)

Busha and Harter provide the following list of 10 hints:

1. Unless the nature of a survey definitely warrants their usage, avoid slang, jargon, and technical terms.
2. Whenever possible, develop consistent response methods.
3. Make questions as impersonal as possible.
4. Do not bias later responses by the wording used in earlier questions.
5. As an ordinary rule, sequence questions from the general to the specific.
6. If closed questions are employed, try to develop exhaustive and mutually exclusive response alternatives.
7. Insofar as possible, place questions with similar content together in the survey instrument.
8. Make the questions as easy to answer as possible.
9. When unique and unusual terms need to be defined in questionnaire items, use very clear definitions.

10. Use an attractive questionnaire format that conveys professional image. As may be seen, designing good questions is much more difficult than it seems.

One effective way of making sure that questions measure what they are supposed to measure is to test them out first, using small focus groups.

This is intended primarily for those who are new to survey research. It discusses options and provides suggestion on how to design and conduct a successful survey project. It does not provide instruction on using specific parts of The Survey System, although it mentions parts of the program that can help you with certain tasks.

9.4 STEPS IN A SURVEY PROJECT

1. Establish the goals of the project - What you want to learn
2. Determine your sample - Whom you will interview
3. Choose interviewing methodology - How you will interview
4. Create your questionnaire - What you will ask
5. Pre-test the questionnaire, if practical - Test the questions
6. Conduct interviews and enter data - Ask the questions
7. Analyze the data - Produce the reports

This chapter covers the first five steps. The Survey System's Tutorial chapters 1 and 2 cover entering data and producing reports.

Establishing Goals The first step in any survey is deciding what you want to learn. The goals of the project determine whom you will survey and what you will ask them. If your goals are unclear, the results will probably be unclear. Some typical goals include learning more about:

- The Potential market for new product or service.
- Ratings of current products or services.
- Employee attitudes.
- Customer/patient satisfaction levels.
- Reader/viewer/listener opinions.
- Association member's opinions.
- Opinions about political candidates or issues.

- Corporate images.

These sample goals represent general areas. The more specific you can make your goals, the easier it will be to get usable answers.

1. Selecting Your Sample

There are two main components in determining whom you will interview. The first is deciding what kind of people to interview. Researchers often call this group the target population. If you conduct an employee attitude survey or an association membership survey, the population is obvious. If you are trying to determine the likely success of a product, the target population may be less obvious. Correctly determining the target population is critical. If you do not interview the right kinds of people, you will not successfully meet your goals.

The next thing to decide is how many people you need to interview. Statisticians know that a small, representative sample will reflect the group from which it is drawn. The larger the sample, the more precisely it reflects the target group. However, the rate of improvement in the precision decreases as your sample size increases. For example, to increase a sample from 250 to 1,000 only doubles the precision. You must make a decision about your sample size based on factors such as: time available, budget and necessary degree of precision.

The Survey System (and this Web site) includes a sample size calculator that can help you decide on the sample size (jump to the calculator page for a general discussion of sample size considerations).

2. Avoiding a Biased Sample

A biased sample will produce biased results. Totally excluding all bias is almost impossible; however, if you recognize bias exists you can intuitively discount some of the answers. The following list shows some examples of biased samples.

The consequences of a source of bias depend on the nature of the survey. For example, a survey for product aimed at retirees will not be as biased by daytime interviews as will a general public opinion survey. A survey about Internet products can safely ignore people who do not use the Internet.

3. Quotas

A Quota is a sample size for a sub-group. It is sometimes useful to establish quotas to ensure that your sample accurately reflects relevant sub-groups in your target population. For example, men and women have somewhat different opinions in many areas. If you want your survey to accurately reflect the general population's opinions, you will want to ensure that the percentage of men and

women in your sample reflect their percentages of the general population.

If you are interviewing users of a particular type of product, you probably want to ensure that users of those different current brands are represented in proportion that approximates the current market share. Alternatively, you may want to ensure that

Sample	Probable Bias	Reason
Your customers	Favorable	They would not be your customers if they were unhappy, but it is important to know what keeps them happy.
Your Ex Customers	Unfavorable	If they were happy they would not be ex-customers, but it is important to know why they left you.
“Phone-In”	Extreme views	Only people with a strong interest polls in a subject (either for or against) are likely to call in - and they may do so several times to load the vote.
Daytime	Non-Working	A majority of people who are at home during interviews the day do not work. Their opinions may not reflect the working population.
Internet	Atypical People	Limited to people with Internet access. Internet users are not representative of the general population, even when matched on age, gender, etc. This can be a serious problem, unless you are only interested in people who have Internet access. In many business surveys this limitation might not be a problem. Another concern is that respondents have been known to complete multiple surveys to sway results, unless the software prevents this.

you have enough users of each brand to be able to analyze the users of each brand as a separate group. If you are doing telephone or Web page interviewing, The Survey System's optional Sample Management or Internet Module can help you enforce quotas. They let you create automatically enforced quotas and/or monitor your sample during interviewing sessions.

4. Interviewing Methods

Once you have decided on your sample you must decide on your method of data collection. Each method has advantages and disadvantages.

5. Personal Interviews

An interview is called personal when the interviewer asks the questions face- to-face with the Interviewee. Personal interviews can take place in the home, at a shopping mall, on the street, outside a movie theatre or polling place, and so on.

Advantages

- The ability to let the Interviewee see, feel and/or taste a product.
- The ability to find the target population. For example, you can find people who have seen a film much more easily outside a theater in which it is playing than by calling phone numbers at random.
- Longer interviews are sometimes tolerated. Particularly with in-home interviews that have been arranged in advance. People may be willing to talk longer face- to-face than to someone on the phone.

Disadvantages

- Personal interviews usually cost more per interview than other methods. This is particularly true of in-home interviews, where travel time is a major factor.
- Each mall has its own characteristic. It draws its clientele from a specific geographic area surrounding it, and its shop profile also influences the type of client. These characteristics may differ from the target population and create a non-representative sample.

6. Telephone Surveys

Surveying by telephone is the most popular interviewing method in the USA. This is made possible by nearly universal coverage (96% of homes have a telephone).

Advantages

- People can usually be contacted faster over the telephone than with other methods. If the Interviewers are using CATI (Computer-assisted telephone interviewing), the results can be available minutes after completing the last interview.
- You can dial random telephone numbers when you do not have the actual telephone numbers of potential respondents.

- CATI software, such as The Survey System, makes complex questionnaires practical by offering many logic options. It can automatically skip questions, perform calculations and modify questions based on the answers to earlier questions or answers choices in a random order (the last two are sometimes important for reasons described later).
- Skilled interviewers can often elicit longer or more complete answers than people will give on their own to mail, surveys (though some people will give longer answers to Web page surveys). Interviewers can also ask for clarification of unclear responses.
- Some software, such as The Survey System, can combine survey answers with pre-existing information you have about the people being interviewed.

Disadvantages

- Many telemarketers have given legitimate research a bad name by claiming to be doing research when they start a sales call. Consequently, many people are reluctant to answer phone interviews and use their answering machines to screen calls. Since over half of the homes in the USA have answering machines, this problem is getting worse.
- The growing number of working women often means that no one is home during the day. This limit calling time to a "window" of about 6-9 p.m. (when you be sure to interrupt dinner or a favorite TV program).
 - You cannot show or sample products by phone.

7. Mail surveys Advantages

- Mail surveys are among the least expensive.
- This is the only kind of survey you can do if you have the names and addresses of the target population, but not their telephone numbers.
- The questionnaire can include pictures - something that is not possible over the phone.
- Mail surveys allow the respondents to answer at their leisure, rather than at the often-inconvenient moment they are contacted for a phone or personal interview. For this reason, they are not considered as intrusive as other kinds of interviews.

Disadvantages

Time! Mail surveys take longer than other kinds. You will need to wait several weeks after mailing out questionnaires before you can be sure that you have gotten most of the responses.

In populations of lower educational and literacy levels, responses rates to mail surveys are often too small to be useful. This, in effect, eliminates many immigrant populations that form substantial

markets in many areas. Even in well-educated populations, response rates vary from as low as 3% up to 90%. As a rule of thumb, the best response levels are achieved from highly-educated people and people with a particular interest in the subject (which, depending on your target population, could lead to a biased sample).

One way of improving response rates to mail surveys is to mail a postcard telling your sample to watch for questionnaire in the next week or two. Another is to follow up a questionnaire mailing after a couple of weeks with a card asking people to return the questionnaire. The downside is that this doubles or triples your mailing cost. If you have purchased a mailing list from a supplier, you may also have to pay a second (and third) use fee - you often cannot buy the list once and re-use it.

Another way to increase responses to mail surveys is to use an incentive. One possibility is to send a dollar bill (or more) along with the survey (or offer to donate the dollar to a charity specified by the respondent). If you do so, be sure to say that the dollar is a way of saying "thanks", rather than payment for their time. Many people will consider their time worth more than a dollar. Another possibility is to include the people who return completed surveys in a drawing for a prize. A third is to offer a copy of the (non-confidential) result highlights to those who complete the questionnaire. Any of these techniques will increase the response rates.

Remember that if you want a sample of 1,000 people, and you estimate a 10% response level, you need to mail 10,000 questionnaires. You may want to check with your local post office about bulk mail rates-you can save on postage using this mailing method. However, most researchers do not use bulk mail, because many people associate "bulk" with "junk" and will throw it out without opening the envelope, lowering your response rate. Also, bulk mail moves slowly, increasing the time needed to complete your project.

8.Computer Direct Interviews

These are interviews in which the Interviewees enter their own answers directly into a computer. They can be used at malls, trade shows, offices and soon. The Survey System's optional Interviewing Module and Interview Stations can easily create computer-direct interviews. Some researchers set up a Web page survey for this purpose.

Advantages

- The virtual elimination of data entry and editing costs.
- You will get more accurate answers to sensitive questions. Recent studies of potential blood donors have shown respondents were more likely to reveal HIV-related risk factors to a computer screen than to either human interviewers or paper questionnaires. The National Institute of Justice has also found that computer-aided surveys among drug users get better results than personal

interviews. Employees are also more often willing to give more honest answers to a computer than to a person or paper questionnaire.

- The elimination of interviewer bias. Different interviewers can ask questions in different ways, leading to different results. The computer asks the questions the same way every time.
- Ensuring skip patterns are accurately followed. The Survey System can ensure people are not asked questions they should skip based on their earlier answers. These automatic skips are more accurate than relying on an Interviewer reading a paper questionnaire.
- Response rates are usually higher. Computer-aided interviewing is still novel enough that some people will answer a computer interview when they would not have completed another kind of interview.

Disadvantages

- The Interviewees must have access to a computer or one must be provided for them.
- As with mail surveys, computer direct interviews may have serious response rate problems in populations of lower educational and literacy levels. This method may grow in importance as computer use increases.

9.Email Surveys

Email surveys are both very economical and very fast. More people have email than have full Internet access. This makes email a better choice than a Web page survey for some populations. On the other hand, email surveys are limited to simple questionnaires, whereas Web page surveys can include complex logic.

Advantages

- Speed. An email questionnaire can gather several thousand responses within a day or two.
- There is practically no cost involved once the set-up has been completed.
- You can attach pictures and sound files.
- The novelty element of an email survey often stimulates higher response levels than ordinary "snail" mail surveys.

Disadvantages

- You must possess (or purchase) a list of email addresses.
- Some people will respond several times or pass questionnaires along to friends to answer. Many programs have no check to eliminate people responding multiple times to bias the results. The

Survey System's Email Module will only accept one reply from each address sent the questionnaire. It eliminates duplicate and pass along questionnaires and checks to ensure that respondents have not ignored instructions (e.g., giving 2 answers to a question requesting only one).

- Many people dislike unsolicited email even more than unsolicited regular mail. You may want to send email questionnaires only to people who expect to get email from you.
- You cannot use email surveys to generalize findings to the whole populations. People who have email are different from those who do not, even when matched on demographic characteristics, such as age and gender.
- Email surveys cannot automatically skip questions or randomize question or answer choice order or use other automatic techniques that can enhance surveys the way Web page surveys can.

Many email programs are limited to plain ASCII text questionnaires and cannot show pictures. Email questionnaires from The Survey System can attach graphic or sound files. Although use of email is growing very rapidly, it is not universal - and is even less so outside the USA (three-quarters of the world's email traffic takes place within the USA). Many "average" citizens still do not possess email facilities, especially older people and those in lower income and education groups. So, email surveys do not reflect the population as a whole. At this stage they are probably best used in a corporate environment where email is common or when most members of the target population are known to have email.

10.Internet/Intranet (Web Page) Surveys

Web surveys are rapidly gaining popularity. They have major speed, cost and flexibility advantages, but also significant sampling limitations. These limitations make software selection especially important and restrict the groups you can study using this technique.

Advantages

- Web page surveys are extremely fast. Questionnaire posted on a popular Web site can gather several thousand responses within a few hours. Many people who will respond to an email invitation to take a Web survey will do so the first day, and most will do so within a few days.
- There is practically no cost involved once the set-up has been completed. Large samples do not cost more than smaller ones (except for any cost to acquire the sample).
- You can show pictures. Some Web survey software can also show video and play sound.
- Web page questionnaires can use complex question skipping logic, randomization and other features not possible with paper questionnaires or most email surveys. These features can assure better data.

- Web page questionnaires can use colours, fonts and other formatting options not possible in most email surveys.
- A significant number of people will give more honest answers to questions about sensitive topics, such as drug use or sex, when giving their answers to a computer, instead of to a person or on paper.
- On average, people give longer answers to open-ended questions on Web page questionnaires than they do on other kinds of self-administered surveys.
- Some Web survey software, such as The Survey System, can combine the survey answers with pre-existing information you have about individuals taking a survey.

Disadvantages

- Current use of the Internet is far from universal. Internet surveys do not reflect the population as a whole. This is true even if a sample of Internet users is selected to match the general population in terms of age, gender and other demographics.
- People can easily quit in the middle of a questionnaire. They are not as likely to complete a long questionnaire on the Web as they would be if talking with a good interviewer.
- If your survey pops up on a web page, you often have no control over who replies anyone from Antarctica to Zanzibar, cruising that web page may answer.
- Depending on your software, there is often no control over people responding multiple times to bias the results.
- At this stage we recommend using the Internet for surveys mainly when your target population consists entirely or almost entirely of Internet users. Business-to-business research and employee attitude surveys can often meet this requirement. Surveys of the general population usually will not. Another reason to use a Web page survey is when you want to show video or both sound and graphics. A Web page survey may be the only practical way to have many people view and react to a video.
- In any case, be sure your survey software prevents people from completing more than one questionnaire. You may also want to restrict access by requiring a password (good software allows this option) or by putting the survey on a page that can only be accessed directly (i.e., there are no links to it from other pages).

CHECK YOUR PROGRESS-I

1) List the limitations of Questionnaire as a tool of data collection.

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.....
.....
.....

2) What is the main difference between Questionnaire and Interview schedule.

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.....
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.....

11.Scanning Questionnaires

Scanning questionnaires is a method of data collection that can be used with paper questionnaires that have been administered in face-to-face interviews; mail surveys or surveys completed by an Interviewer over the telephone. The Survey System can produce paper questionnaires that can be scanned using Remark Office OMR (available from CRS). Other software can scan questionnaires and produce ASCII Files that can be read into The Survey System.

Advantages

- Scanning can be the fastest method of data entry for paper questionnaires.
- Scanning is more accurate than a person in reading a properly completed questionnaire.

Disadvantages

- Scanning is best-suited to "check the box" type surveys and bar codes. Scanning programs have various methods to deal with text responses, but all require additional data entry time.
- Scanning is less forgiving (accurate) than a person in reading a poorly marked

questionnaire. Requires investment in additional hardware to do the actual scanning.

9.5 LET US SUM UP

Thus, survey is extensively used in library and information science. To assess attitudes and characteristics of wide range of subjects, from the quality of user-system interfaces to library user reading habits.

9.6 GLOSSARY

1.Survey research methods: It can be derived based on two critical factors: Survey research tool and time involved in conducting research.

2.Longitudinal survey research: Longitudinal survey research involves conducting survey research over a continuum of time and spread across years and decades. The data collected using this survey research method from one time period to another is qualitative or quantitative.

3.Cross-sectional survey research: Researchers conduct a cross-sectional survey to collect insights from a target audience at a particular time interval. This survey research method is implemented in various sectors such as retail, education, healthcare, SME businesses, etc.

9.7 SELF ASSESSMENT QUESTIONS

1. How you define the term survey.

2. Discuss various types of surveys in brief.

3. Write about various steps in survey project.

9.8 LESSON END EXERCISE

Multiple Choice Questions

Q1: The main principle of surveying is to work from:

- (a) The part to the whole
- (b) The whole to the part
- (c) The center to the boundary
- (d) The boundary to the center

Q2: The curvature of the earth is ignored in which type of surveying?

- (a) Geodetic surveying
- (b) Plane surveying
- (c) Hydrographic surveying
- (d) Topographical surveying

Q3: Which type of surveying is used for preparing a map that shows the natural features of a country?

- (a) Cadastral survey
- (b) Topographical survey
- (c) Engineering survey

(d) Hydrographic survey

Q4: In which situation is plane table surveying used?

(a) In a magnetic area

(b) To take measurements for height and distance

(c) To determine the area of a small plot

(d) None of the above

Q5: Which method is used to locate an inaccessible point?

(a) Radiation method

(b) Resection method

(c) Intersection method

(d) Traversing method

9.9 ANSWER KEY (LESSON END EXERCISE)

Answers: 1-b, 2- b, 3-b, 4-a, 5-c

9.10 SUGGESTED READINGS

- Kothari, C.R (2004) Research Methodology Methods and Techniques (2nd Revised Edition), New Age International Publishers.
- O'Leary, Zina (2005) The Essential Guide to Doing Research Vistar Publications, New Delhi.

RESEARCH DESIGN

STRUCTURE

- 10.0 Learning Objectives**
- 10.1 Introduction**
- 10.2 Meaning of Research Design**
- 10.3 Functions of Research Design**
- 10.4 Difference in Quantitative and Qualitative Research**
- 10.5 Design for different types of Research**
- 10.6 Advantages of Research Design**
- 10.7 Stages for Outlining**
- 10.8 Let us sum up**
- 10.9 Glossary**
- 10.10 Self-Assessment Questions**
- 10.11 Lesson End Exercise**
- 10.12 Answer Key**
- 10.13 Suggested Readings**

10.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- **Understand the meaning of research design**
- **Know the function of research design**

- **Explore various stages for outlining research design**

10.1 INTRODUCTION

Any research is valid when its conclusions are true. It is reliable when the findings are repeatable. Reliability and validity of the research require the planning of inquiry, i.e., the detailed strategy of how the research will be conducted. Good research depends on two aspects of its designing: first, specifying what one wants to find out, i.e., properly posing the problem or properly phrasing the issue (s) to be studied or logical structuring of inquiry; and second, determining how to do it, i.e., collecting data through scientific and appropriate methods, using effective techniques of data analysis and rational and meaningful deduction(s). In short, the designing or process of research is concerned with making controlled scientific inquiry.

10.2 MEANING OF RESEARCH DESIGN

The term 'design' means "drawing an outline" or planning or arranging details. It is a process of making decisions before the situation arises in which the decision has to be carried out. 'Research design' is planning a strategy of conducting research. It plans as to: what is to be observed, how it is to be observed, when/where it is to be observed, why it is to be observed, how to record observations, how to analyze/ interpret observations, and how to generalize. Research design is, thus, a detailed plan of how the goals of research will be achieved.

According to Henry Manheim, "research design not only anticipates and specifies the seemingly countless decisions connected with carrying out data collection, processing and analysis but it presents a logical basis for these decisions".

William Zikmund (1988) has described research design as "a master plan specifying the methods and procedures for collecting and analyzing the needed information."

C. R. Kothari's description as the "conceptual structure within which research is conducted, it constitutes the blueprint for the collection, measurement and analysis of data".

Other authors emphasize its role in answering research questions and controlling variables, such as Kerlinger who calls it the "plan, structure and strategy of investigation purporting to answer research questions and control variance".

10.3 FUNCTIONS OF RESEARCH DESIGN

Black and Champion (1976:77) have given three important functions of research design. These are described as under:

- 1. It provides blueprint**

Just as a house-builder faces many problems without drawings and plans, i.e.

where to place foundation, what materials are required, how many workers are required, how many rooms are to be constructed, how many doors and windows are needed in a room, on which side is the door/window to be given, how big is to be the door/ window and so on, similarly a researcher faces many problems like what sample is to be taken, what is to be asked, what method of data collection is to be used, and so forth. Research plan minimizes all these problems of the researchers because all decisions are taken beforehand.

2. It limits (dictates) boundaries of research activity

This refers to determining whether only one (or selected) cause out of many causes is to be examined, only one (or a few selected) hypothesis is to be tested, only attitudes of students of one educational institution are to be studied, and so on. Since the objectives are clear and the structure is also provided, systematic investigation is possible.

3. It enables investigation to anticipate potential problems

The researcher studies available (other) literature and learns about new/ alternative approaches, e.g., he gets an estimate of personnel required as investigator(s), cost, possible measurement of problems, and so forth.

4. Provides direction: It serves as a blueprint that outlines the specific steps, procedures, and methods needed for data collection and analysis.

5. Minimizes bias and errors: A well-structured design helps to reduce errors and researcher or participant bias, ensuring a more objective study.

6. Ensures reliability and validity: It aims to make the study's findings consistent (reliable) and accurate (valid).

7. Guides resource allocation: It explicitly defines the resources needed, allowing for better planning and efficient allocation of time, money, and effort.

8. Increases efficiency: By clearly defining the problem, objectives, and methods, it makes the research process more efficient and provides maximum information with minimal expenditure.

9. Facilitates replication: A detailed design allows other researchers to replicate the study to verify the findings.

10. Answers the research question: The primary function is to ensure that the evidence gathered and analyzed will provide a valid answer to the research problem or question.

11. Controls variance: It works to maximize the effect of variables being studied, control extraneous variables that could influence the results, and minimize error variance.

- **Characteristics of Good Research Design**

In the task of designing research, if the researcher gives importance to the following five factors, his analysis can prove to be logically sound:

1. Researcher should know how many different points in time the data are to be collected. Is all data to be collected essentially at one time or there has to be some time elapse between various stages of data collection? For example, in the study of offender's enders' adjustment in prison, should questions relate to time totally spent in jail or should it be studied in different periods like, first three months, after spending one year, three years, five years, seven years, ten years, twelve years or more years. Will the period spend in jail affect the process of prisonization?
2. Researchers should know how many research situations, i.e., individuals, groups, communities, organizations, etc., will be of his interest and how are these varied situations to be interrelated? Is one group, one community, one organisation to be compared with other group, community or organization?
3. Does study involve change? What different time periods are to be used for collecting information? Say, should development of a village community be studied when poverty alleviation programmes like IRDP, Jawahar Rozgar Yojna (JRY), etc., were implemented through bureaucratic decisions, or after introducing Panchayati Raj schemes, or after the empowerment of women in village by reserving 33 per cent seats for them in panchayats?
4. **Lastly**, the important question for the researcher is whether the research is descriptive, exploratory or explanatory, pure or applied? The difference in research design of different types of research is crucial.
5. **Fixing sample**, i.e., deciding the numbers of subjects from whom the data is to be collected and how these subjects to be chosen are.
6. **Specifying tools of study**, i.e., whether data are to be obtained through questionnaire, schedule, interview or observation. Whether it will be case study, survey, field study or experimental study.
7. **Designing the kind of analysis**, i.e., whether any statistical test will be conducted and which one? Specifying logic of type of analysis chosen. Will it be cohort (for comparison) study?
8. **Fixing time-schedule**, i.e., providing various stages and describing time to be devoted to each stage.
9. **Budget, i.e.**, if someone has sponsored the study (say, UGC, ICSSR, UNICEF, Welfare Ministry of Government of India, etc.) Amount is to be specified for salaries (to investigators, etc.), travelling, contingency, computer analysis and miscellaneous expenses.

10.4 DIFFERENCE IN DESIGNING QUANTITATIVE AND QUALITATIVE RESEARCH

Quantitative researchers tend to be more prescriptive than qualitative researcher. The latter operate with as few prescriptions as possible. The pattern of designing described above is mainly for quantitative research. Some people hold that the qualitative researchers usually do not employ a design. They are more open and flexible and have greater freedom of choice. But this is not correct. Investigators engaged in qualitative research are equally concerned with how, what, where and when the data are to be collected. However, some differences in designing the two types of research (quantitative is described here as 'former' and qualitative as 'latter') may be pointed here (Sarantakos, 1998:105):

1. In the former research, the problem is specific and precise; in the latter research, it is general and loosely structured.
2. In the former, the hypotheses are formulated before the study; in the latter, hypotheses are propounded either during the study or after the study.
3. In the former, concepts are operationalized; in the latter concepts are only sensitized.
4. In the former, in designing research, the design is prescriptive; in the latter, the design is not prescriptive.
5. In the former, sampling is planned before data collection; in the latter, it is planned during data collection.
6. In the former, sampling is representative; in the latter, it is not representative.
7. In the former, all types of measurement/scales are employed; in the latter, mostly nominal scales are used.
8. In the former, for data collection, generally investigators are employed in big researches; in the latter, the researchers analyse data single-handed.
9. In the former, in processing data, usually inductive generalisations are made; in the latter, usually analytical generalisations are made.
10. In reporting in the former research, the findings are highly integrated; in the latter, the findings are mostly not integrated.

10.5 DESIGN FOR DIFFERENT TYPES OF RESEARCH

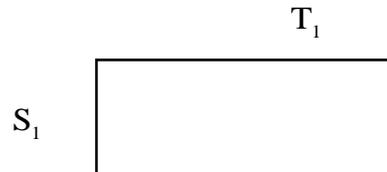
Manheim has pointed out differences in designing three types of research, viz., descriptive, explanatory, and exploratory.

(i) DESIGN FOR DESCRIPTIVE RESEARCH

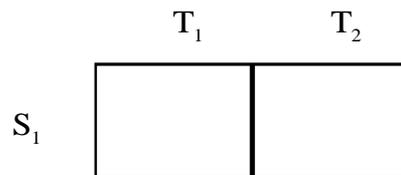
The major goal of descriptive research is to describe events, phenomena and situations. Since description is made on the basis of scientific observation, it is expected to be more accurate and

precise than casual. Some examples of descriptive research are: the nature and magnitude of domestic violence against women, the problems and adjustment of war widows, alcoholism among youth, sub-culture of hostlers, exit polls conducted by various organizations describing the voting pattern of electorate, and so forth. The study of drug abuse among college students in different universities in 1976 and again in 1986 and 1996 sponsored by the Ministry of Welfare Government of India is an example of descriptive research. Generally, in a descriptive

Research, that data are collected in a single situation (S_1) pertaining to single time period (T_1). This is called a one-cell design, which can be diagrammatically shown as below:

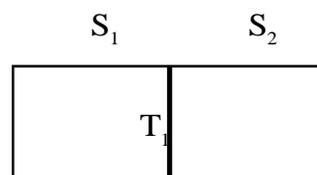


Its (s_1, t_1) example is studying wife battering cases through snowball method in one selected neighborhood (area) in a city in one time. But the study pertaining to one Situation (or issue) can be made in two time periods also, as shown below:



This is commonly known as longitudinal design and is called two-cell design, e.g., studying drug abuse among truck-drivers first in 1995 and again in 2000. When the study is comparison of two periods, present and past, it is known as ex post facto design, e.g., comparing present status of women with status before independence.

Its other form will be that the study is made in two situations (areas) at one particular time, as illustrated below:

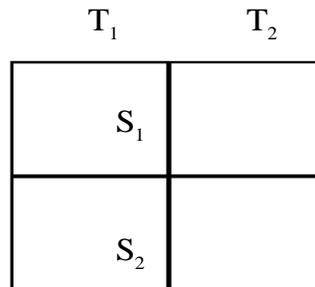


For example, studying drug abuse among truck-drivers in Jaipur and Delhi. If the study covers three (or more) times, it will be considered as three (or more)-cell design and diagrammatically presented below:



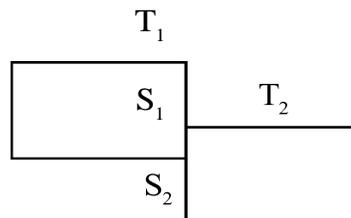


This is also called a panel design. If the study covers two situations at two times, it will be four-cell design, as shown below:



If the data are collected from one situation at one time and from another situation at another time, it will be called a matched stage study.

Diagrammatically, it can be displayed as under:



For example, studying of voting behavior Jaipur in 1998 parliamentary elections and then in Delhi in 1999 parliamentary elections.

(ii) DESIGN FOR EXPLANATORY RESEARCH

Explanatory or causal research is mainly concerned with causes or 'why' factor about some phenomenon. It does not involve comparison and factors of change. For instance, research on 'Violence Against Women' conducted by this author described not only varieties of violence like criminal assault, battering, kidnapping, murder, dowry deaths, etc., but also explained why men commit violence because of personality traits like dominance, suspicion, possession, etc., and situational factors like resourcefulness, alcoholism, maladjustment, strains, and stresses, and so on. The hypothesis in explanatory research that expresses relationship between two or more variables. That is, not only it is hypothesized that A is related to B but rather that A has some particular effect on B. In other words, we say that B is the consequence of A. The research design in explanatory study thus focuses on ascertaining the 'why' aspect of correlation ship. As an example, we can say that the study of voting behaviour of people in parliamentary elections, held in March 1998 and September 1999 respectively, were explanatory studies because these explained how people so voted because of caste, language or alignments, political ideology, honest and committed image of the candidate, programmes and policies of the political parties, etc. The important variable between two periods was Kargil war because of which there was a swing in votes in favour of National Democratic Alliance (NDA), led by the BJP. This study was conducted in two situations at two times but it was focused on causal factors of more votes in favour of the BJP due to (i) Kargil war, (ii) division of Congress in two groups after Sharad Pawar's forming a separate political party, and (iii) alignment of the BJP with more regional parties (like DMK, Janata Dal (U), Indian National Lok Dal, etc.) Thus, for explanatory studies also, many kinds of designs could be appropriate, e.g., two-cell design, four-cell design, matching design (a process whereby two or more situations are made equal, each having advantages, and disadvantages, depending men the particular objective of the research.

(iii) DESIGN FOR EXPLORATORY RESEARCH

This research is mostly carried out when there is not sufficient information available about the issue to be studied, or, in other words, the researcher has either no knowledge or a limited knowledge. For example, in the study of effect of TV on young students, who may be explored is the magnitude of the problem or what percentage of students watch TV, the types of programmes preferred, frequency of watching programmes, effect on studies, impact on infra-family relations, and so on.

Much, but not all, exploratory research is qualitative. For instance, research on strikes in educational institutions. A researcher who takes up this type of study from qualitative point of view will be concerned not with the extent of strikes in terms of numbers but to explore the phenomena as to the type of students who initiate agitation, the issues which prompt them to go on strike, the support they seek from politicians, and so forth. The design for this type of qualitative study has naturally to be different. Not only varied but inexpensive sources have to be tackled for getting the information.

Types of Exploratory Studies

Exploratory studies can be of many forms, depending on the nature of the main study, the purpose of the research and the purpose of exploration, etc. Selltitz et al (1976) have referred to following three forms:

- a) **Review of available literature:** This involves a secondary analysis of available informational ready published in some form. The available information about structure, process, and relationships of the particular phenomenon with varied factors, can help in linking it with the study currently planned. It may also help in a historical or comparative analysis of the issue or in reviewing a theory simply by looking at the way other researchers have approached the topic.
- b) **Expert surveys:** These involve interviews with experts who have substantial knowledge and experience in the research area although their findings have not been published yet.
- c) **Case studies:** This type refers to "insight stimulating examples". Single cases relevant to the issue are selected and studied in order to collect information for the main study.

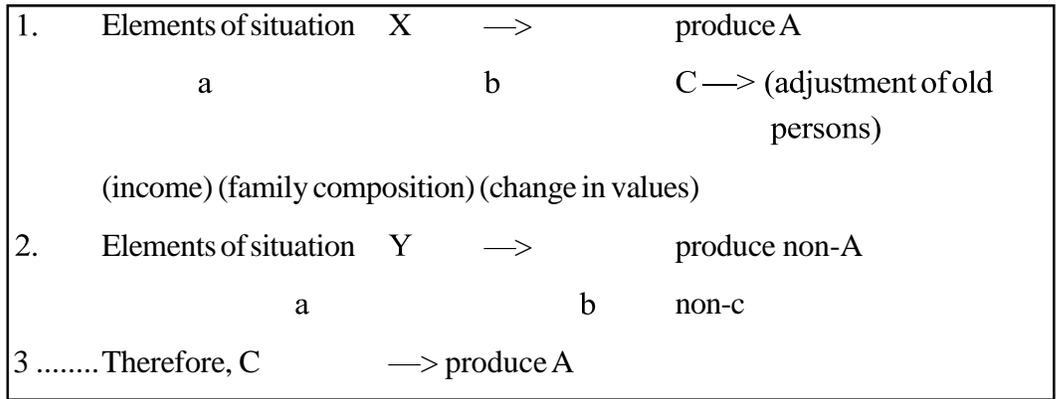
iv) EXPERIMENTAL RESEARCH DESIGN

It is a design in which some of the variables being studied are manipulated or which seeks to control conditions within which persons are observed. Here 'control' means holding one factor constant while others are free to vary in the experiment. One variable (independent) is manipulated and its effect upon another variable (dependent) is measured, while other variables which may confound such a relationship are eliminated or controlled (Zikmund, op. cit.: 210). For example, not giving a break of ten minutes or so between starting work and lunch hour and again between lunch hour and closing hour to workers is supposed to be very hazardous. Will the break remove their physical discomfort and effect on eyes? The experimenter studies the effect through comparison with experiment and without experiment. When the two groups of workers (getting tea-break and not getting tea break) with identical job functions are compared, they exhibit differences in the perception of physical discomfort that lingered after work. This shows how by manipulating the independent variable (tea-break), changes in the dependent variable (increase in production) are measured.

The design in the experimental research thus consists of two types of groups:

- (i) Control group, which is not exposed to experimental variable; and (ii) experimental group, which

is exposed to experimental variable. We may take the following illustration (of adjustment of old persons) to explain it:



This shows that adjustment of old persons is not possible without change in their values.

The following example further explains experimental design by keeping one factor constant in two groups of students.

- G₁ = group of students not exposed to teacher's lecture on strike (control group)
- G₂ = group of students exposed to teacher's lecture on strike (experimental group)

G ₁ (Students' attitudes towards strike)	G ₂ (Students' attitudes towards strike)
Favourable: 50	Favourable: 25
Unfavourable: 20	Unfavourable: 45
70	70

The experimental variable is "teacher's lecture on strike". The above example shows how the experimental group (G₂), after being exposed to experimental variable (lecture), changes its attitude towards strike. In the above example, gender variable (i.e., male v/s female) is kept constant in the experimental group. But, suppose, we do not control gender factor and assess attitudes of both male and female students. We will get different picture then.

		<i>Male</i>	<i>Female</i>	<i>Total</i>
Gender not	Favourable	18	7	25
controlled in G ₂	Unfavourable	22	23	45
		40	30	70

In the above example, educational level variable is kept constant, i.e., under control. If we take this variable also for analysis, we get the following figures:

		<i>Postgraduate</i>		<i>Undergraduate</i>		<i>Total</i>
Gender and educational	Unfavourable	<i>Male</i>	4	<i>Male</i>	3	

Researchers attempt to equate experimental groups with control groups on as many salient characteristics or dimensions as possible, e.g., age, years of education, residential background, socio-economic status and the like.

CHECK YOUR PROGRESS-I

1.Enumerate the different kinds of designs based on the nature of investigation? Describe briefly the descriptive design.

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10.6 ADVANTAGES OF DESIGNING RESEARCH

The following advantages of designing research may be pointed:

- (1) Research can be conducted on scientific basis since precise guideline is provided by advance designing, i.e., carrying research in right direction and reducing inaccuracies.
- (2) Wastage of time and money is minimized.
- (3) Optimum reliability is achieved.
- (4) Designing helps in giving useful conclusion (in the form of hypothesis / theories).

10.7 STAGES FOR OUTLINING A RESEARCH PROPOSAL

The following stages may be identified for outlining a research proposal:

1. ***Stating problem*** in terms of researcher's interest, society's concern, and academic contribution to the discipline. A research proposal starts with a brief statement of the problem to be studied.
2. ***Specifying objectives of study***: The specific objectives of the research may be pointed out, limiting the goals in terms of time, money and resources available. The precise objectives will provide functional guidelines for the research activity. The vague objectives have to be avoided so that the study is properly constructed.
3. ***Review of literature of earlier studies***: All the available information on earlier studies and the findings of various researches undertaken on different aspects of the problem under study will familiarize the researcher with knowledge pertaining to the area of study. The extent of reviews cannot be given in quantitative terms. Some research topics may be such that on literature may be available on them e.g., war widows, deviant behaviour of Pandas in places of pilgrimages, role adjustment of working wives living separately from husbands, and so forth.
4. ***Developing conceptual scheme***: The researcher can provide the conceptual scheme of his study by pointing out the relationship between the selected variables. He can also give the explanatory framework upon which the entire research project will rest. For example, in the study of awareness of rights among women, not only the socio-economic background of women (i.e., age, education, family income, etc.) but the environment in which they live, including the attitudes of husband and in laws, will also affect their level of awareness. This conceptual framework will enable the researcher to think of different variables whose association is to be studied. The assumptions and propositions will provide researcher the explanatory framework upon which his research has to rest.
5. ***Framing hypotheses***: Within the context of research proposal hypotheses are propounded in testable form. Their number may not be fixed but they have to be closely related with the objectives of the project and have to be in a form so that they may be subjected to empirical test.
6. ***Determining sample***: The population to be studied, the type of sample to be used, and the size of people to be surveyed have to be provided in the study design.
7. ***Determining methodology (or determining tools to be used)***: The method to be employed for collecting the data is to be specified. The statistical tests and the type of tabular presentation have also to be made explicit.

10.8 LET US SUM UP

We may conclude that undertaking research needs carefully determining a systematic model which may guide all significant elements of the study. Though each research model has individuality, but in principle it will vary, little from other models. The context of the model will be same (problem selection, sampling, data collection, data analysis and reporting); only the content will vary. If there is accuracy in operation, if the data collection and analysis is well thought out, predictions of general nature, devoid of errors, bias and distortions will be possible.

10.9 GLOSSARY

1. **Research Design:** The overall strategy or framework for conducting a research study, outlining how data will be collected, analyzed, and interpreted to answer research questions.
2. **Research Question:** The specific question that the research aims to answer.
3. **Data Collection Methods:** Techniques used to gather information, such as surveys, interviews, experiments, or observations.
4. **Data Analysis:** The process of examining and interpreting collected data to draw conclusions and answer research questions.
5. **Validity:** The extent to which a research study measures what it is intended to measure (internal validity) and the extent to which the findings can be generalized to other populations or settings (external validity).
6. **Reliability:** The consistency and dependability of a research study's results.

10.10 SELF ASSESSMENT QUESTIONS

Q1. Write in brief about various functions of research design.

Q2. Discuss in detail various advantages of research design.

Q3. How you define the term research design.

10.11 LESSON END EXERCISE

- **Multiple Choice Questions**

1) is something that measures the characteristics of the same person at least twice over time?

- A) Exploratory Design
- B) Longitudinal design
- C) Diagnostic Design
- D) Historical design

2) **What is the purpose of research design?**

- A) To develop a hypothesis
- B) To select a sample
- C) To determine the methods for data collection and analysis
- D) All of the above

Q3) **What is the difference between a quantitative and qualitative research design?**

- A) The type of data collected

- B) The methods used for data collection
- C) The methods used for data analysis
- D) All of the above

Q3) Which of the following is not a type of research design?

- A) Experimental design
- B) Descriptive design
- C) Correlational design
- D) Probability design

Q4) What is the purpose of a pilot study?

- A) To test the feasibility of the research design
- B) To test the reliability and validity of the measures
- C) To determine the appropriate sample size
- D) To collect preliminary data

Q6) What is a cross-sectional research design?

- A) A design in which data is collected at one point in time
- B) A design in which data is collected over a period of time
- C) A design in which data is collected from a representative sample of the population
- D) A design in which data is collected from a non-representative sample of the population

10.12 ANSWER KEY (LESSON END EXERCISE)

Answers: B, C, D, D, D, A, A

10.13 SUGGESTED READINGS

- Babbie, Earl, the Practice of Social Research (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, Methods and Issues in Social Research, John Wiley, New York, 1976.
- Manheim, Henry, Sociological Research: Philosophy and Methods, The Dorsey Press, Illinois, 1977.
- Russell, Ackoff, Design of Social Research, University of Chicago Press, Chicago, 1961.
- Singleton, Royce and Bruce C. Straits, Approaches to Social Research (3rd ed.) Oxford University Press, New York, 1989.

SAMPLING

STRUCTURE

- 11.0 Learning Objectives**
- 11.1 Introduction**
- 11.2 Types of Sampling**
- 11.3 Probability Sampling**
- 11.4 Non-Probability Sampling**
- 11.5 Difference between Probability Sampling Methods and Non-Probability Sampling Methods**
- 11.6 Uses of Probability Sampling**
- 11.7 Uses of Non-Probability Sampling**
- 11.8 Let us sum up**
- 11.9 Glossary**
- 11.10 Self-Assessment Questions**
- 11.11 Lesson End Exercise**
- 11.12 Answer Key**
- 11.13 Suggested Readings**

11.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- Understand the meaning of sampling
- Examine the different types of sampling
- Know the difference between probability sampling and non-probability sampling.

11.1 INTRODUCTION

While conducting a survey, a question is usually asked: Should all people (entire population) be studied or only a limited number of persons drawn from the total population are studied and then extend our findings about the sample to the entire population? **‘Population’ refers to “all those people with the characteristics which the researcher wants to study within the context of a particular research problem”**. A population could be all students in the college, all patients in the hospital all prisoners in the prison, all customers in a big departmental store, all users of a particular model of car, all households in the village, all workers in the factory, all cultivators using the water of a particular canal in the settlement area for irrigational purposes, all victims of a natural disaster in a particular area, and so on. When the population is natural disaster in a particular area, and so on. When the population is relatively large and is physically not accessible, researchers survey only a sample.

Meaning:

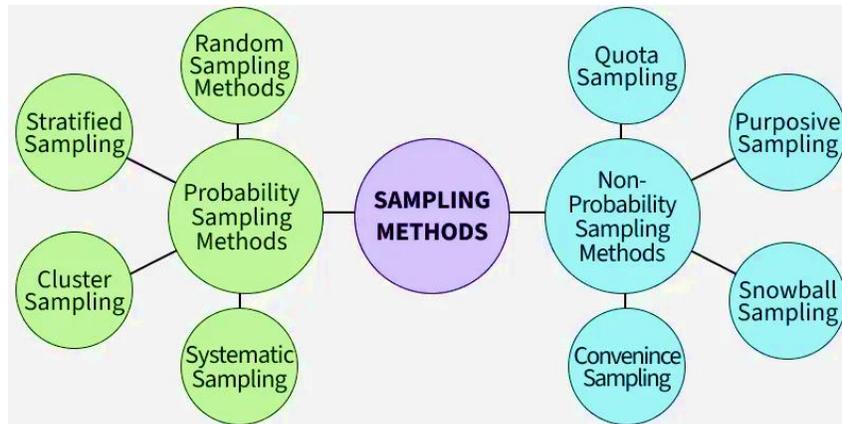
A sample is a portion of people drawn from a larger population. It will be representative of the population only if it has same basic characteristics of the population from which it is drawn. Thus, our concern in sampling is not about what types of units (persons) will be interviewed/ observed but with how many units of what particular description and what method should be chosen.

11.2 TYPES OF SAMPLING

There are basically two types of sampling: probability sampling and non- probability sampling.

1. PROBABILITY SAMPLING is one in which every unit of the population has an equal probability of being selected for the sample. It offers a high degree of representativeness. However, this method is expensive, time-consuming and relatively complicated since it requires a large sample size and units selected are usually widely scattered.

2. NON-PROBABILITY SAMPLING makes no claim for representativeness, as every unit does not get the chance of being selected. It is the researcher who decides which sample units should be chosen.



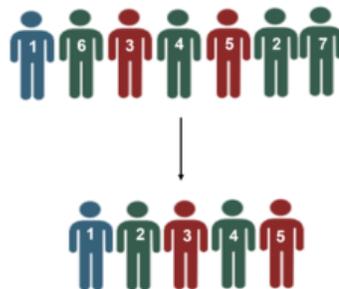
11.3 PROBABILITY SAMPLING

Probability sampling today remains the primary method for selecting large, representative samples for social science and business researches. According to **Black and Champion** (1976: 266), the probability sampling requires following conditions to be satisfied: (1) complete list of subjects to be studied is available; (2) size of the universe must be known; (3) desired sample size must be specified and (4) each element must have an equal chance of being selected.

The six forms of probability sampling are: simple random, stratified random, systematic (or interval), cluster, multi-stage and multi-phase.

(a) SIMPLE RANDOM SAMPLING

Simple random sampling



In simple random sampling, each individual has an equal probability of being chosen, and each selection is independent of the others. Because the choice is entirely based on chance, this is also known as the method of chance selection. In the simple random sampling method, the sample frame comprises the entire population. In this sampling, the sample units are selected by means of a number of methods like lottery method, picking blind folded, Tippet's tables, computer, personal identification number (PIN) or by first letter.

For example, A fitness sports brand is launching a new protein drink and aims to select 20 individuals from a 200-person fitness center to try it. Employing a simple random sampling approach, each of the 200 people is assigned a unique identifier. Of these, 20 individuals are then chosen by generating random numbers between 1 and 200, either manually or through a computer program. Matching these numbers with the individuals creates a randomly selected group of 20 people. This method minimizes sampling bias and ensures a representative subset of the entire population under study.

(i) LOTTERY METHOD

This method involves three steps. **First step** is constructing the sampling frame, i.e., a list of the units of the target population, e.g., students list, the electoral role in alphabetical order and numbered accordingly. **Second step** is writing numbers listed in the sampling frame on small pieces of paper and placing these papers in some vessel/ drum/jar, etc. **Third step** is mixing all papers well and taking out one piece of paper from the jar. This process is continued until the required number of respondents is reached.

For example, 100 houses are to be allotted to applicants out of 2,500 houses constructed. Here 2,500 pieces of papers numbered from 1 to 2,500 are put in a drum and mixed and some eminent person or some child is invited to take out 100 slips from the drum. If the number on the piece of paper is 535, the name on the list that corresponds to that number is identified and recorded. Thus, 100 numbers selected will be allotted of houses.

(ii) TIPPET'S TABLE OR RANDOM NUMBERS METHOD

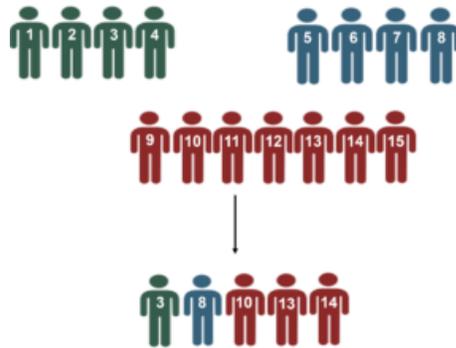
The Tippett table method uses a pre-generated table of random digits (like Tippett's table) to select a simple random sample, involving assigning numbers to population units, choosing a random start point in the table, and then reading off numbers (usually in groups like 3 or 4 digits) to identify sample members, skipping any numbers outside the population's range or repeated numbers (for sampling without replacement). For example, to select 20 from 6,000 items, number items 0001-6000, pick a random start in the 4-digit table, and select the first 20 valid numbers found, moving down columns or across rows as needed.

Example: Selecting 10 students from 300

- 1. Number the Population:** Assign numbers 001 to 300 to the 300 students.
 - 2. Choose a Starting Point:** Randomly point to a spot on Tippett's table (e.g., 96304).
 - 3. Extract Digits:** Take the first three digits (since 300 is a 3-digit number).
 1. 963: Too high (over 300), so ignore and move down.
 2. 238: Valid, select student #238.
 3. 009 (from 00909): Valid, select student #9.
 4. 394 (from 39428): Too high, ignore.
 5. 185 (from 18557): Valid, select student #185.
 - 4. Continue Selection:** Keep going down the column (or across rows) and repeat the process until you have 10 unique student numbers.
 - 5. Handle Duplicates (if sampling without replacement):** If you get "185" again, you skip it and find the next valid number.
- **Key Steps & Considerations**
 - **Numbering:** Ensure consistent numbering (e.g., 000-099 for 100 units).
 - **Digit Grouping:** Group digits from the table to match your population size (e.g., 3 digits for 1-1000, 2 digits for 1-100).
 - **Invalid Numbers:** Discard numbers greater than your population size or that are repeats (for sampling without replacement).
 - **Direction:** Choose a systematic direction (down, up, across) and stick to it.

(b) STRATIFIED RANDOM SAMPLING

Stratified sampling

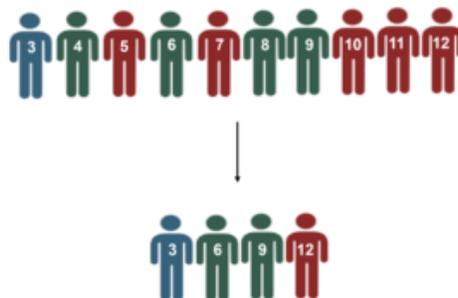


Stratified sampling divides the population into subgroups (strata), and random samples are drawn from each stratum in proportion to its size in the population. Stratified sampling provides improved representation because each subgroup that differs in significant ways is included in the final sample.

For example, suppose the manufacturer aims for a more comprehensive representation of genders in a sample of 200 people, consisting of 90 males, 80 females, and 30 others. The manufacturer categorizes the population into three gender strata (Male, Female, and Others). Within each group, random sampling is employed to select nine males, eight females, and three individuals from the others category, resulting in a well-rounded and representative sample of 200 individuals.

(c) SYSTEMATIC (OR INTERVAL) SAMPLING

Systematic random sampling



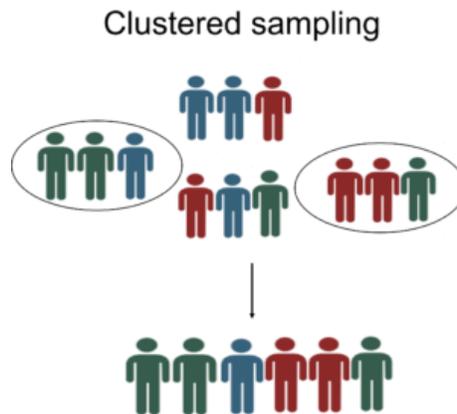
The systematic sampling approach involves selecting units or elements at regular intervals from an ordered list of the population. Because the starting point of this sampling method is chosen at random,

it is more convenient than essential random sampling. For a better understanding, consider the following example.

For example, considering the previous model, individuals at the fitness facility are arranged alphabetically. The manufacturer then initiates the process by randomly selecting a starting point from the first ten positions, let's say 8. Starting from the 8th position, every tenth person on the list is then chosen (e.g., 8, 18, 28, 38, and so forth) until a sample of 20 individuals is obtained.

(d) CLUSTER SAMPLING

In this sampling method, the population is divided into clusters, and then a random sample of clusters is included in the final sample. Clustered sampling, distinct from stratified sampling, involves subgroups (clusters) that exhibit characteristics similar to the whole sample. In the case of small clusters, all members can be included in the final sample, whereas for larger clusters, individuals within each cluster may be sampled using the sampling above methods. This approach is referred to as multistage sampling. This sampling method is well-suited for large and widely distributed populations; however, there is a potential risk of sample error because ensuring that the sampled clusters truly represent the entire population can be challenging.



For example, Researchers conducting a nationwide health study can select specific geographic clusters, like cities or regions, instead of trying to survey the entire population individually. Within each chosen cluster, they sample individuals, providing a representative subset without the logistical challenges of attempting a nationwide survey.

(e) MULTI-STAGE SAMPLING

In this method, sampling is selected in various stages but only the last sample of subjects is

studied. For example, for studying the panchayat system in villages, India is divided into zones (say, four zones, viz., North, South, East and West), one state is selected from each zone (say, Punjab, Rajasthan, Andhra Pradesh and Assam), one district is selected from each state, one block is selected from each district, and three villages are selected from each block. This will help us in comparing the functioning of panchayats in different parts of India. Sampling in each stage will be random but it can also be deliberate or purposive. Thus, multi-stage sampling according to Ackoff (1961:102), can be combination of (i) simple + simple sampling
(ii) Simple +systematic (interval) sampling, and (iii) systematic+ systematic sampling.

(f) MULTI-PHASE SAMPLING

The process in this type of sampling is same as in multi-stage sampling i.e., primary selection, secondary selection, and so on. However, in a multi-phase sampling procedure, each sample is adequately studied before another sample is drawn from it. Consequently, while in multi-stage sampling, only the final sample is studied, in multi- phase sampling, all samples are researched. This offers an advantage over other methods because the information gathered at each phase helps the researcher to choose a more relevant and more representative sample.

11.4 NON-PROBABILITY SAMPLING

In many research situations, particularly those where there is not list of persons to be studied (e.g., wife battering, widows, Maruti car owners, consumers of a particular type of detergent powder, alcoholics, students and teachers who cut classes frequently, migrant workers, and so on), probability sampling is difficult and inappropriate to use. In such researches, non-probability sampling is the most appropriate one.

Non-probability sampling procedures do not employ that rules of probability theory, do not claim representativeness, and are usually used for qualitative exploratory analysis. The five types of non-probability sampling are: convenience, purposive, quota, snowball and volunteer.

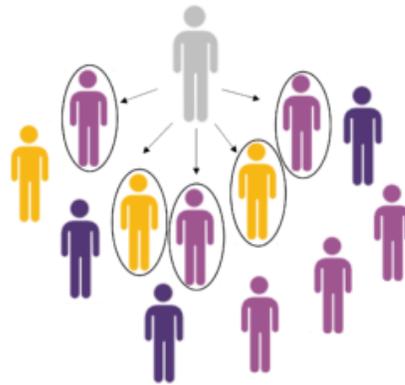
(a) CONVENIENCE/ ACCIDENTAL/HAPHAZARD SAMPLING

This is also known as ‘**accidental**’ on ‘**haphazard**’ sampling. In this sampling, the researcher studies all those persons who are most conveniently available or who accidentally come in his contact during a certain period of time in the research. For example, the researcher engaged in the study of university students might visit the university canteen library, some departments, play-grounds, verandahs and interview certain number of students. Another example is of election study. During election times, media personnel often present man-on-the street interviews that are presumed to reflect public opinion. In such sampling, representativeness is not significant.

The most obvious advantage of convenience sample is that it is quick and economical. But it may be a very biased sample. The possible sources of bias could be: (i) the respondents may have a vested interest to serve in cooperating with the interviewer, and (ii) the respondents may be those who are vocal and/or want to brag. Convenience samples are best utilized for exploratory research when additional research will subsequently be conducted with a probability sample.

For example, imagine you’re a researcher investigating smartphone usage patterns in your city. The most convenient way to select participants is by approaching people in a shopping mall on a weekday afternoon. However, this convenience sampling method may not be an accurate representation of the city’s overall smartphone usage patterns as the sample is limited to individuals present at the mall during weekdays, excluding those who visit on other days or never visit the mall.

Convenience sampling

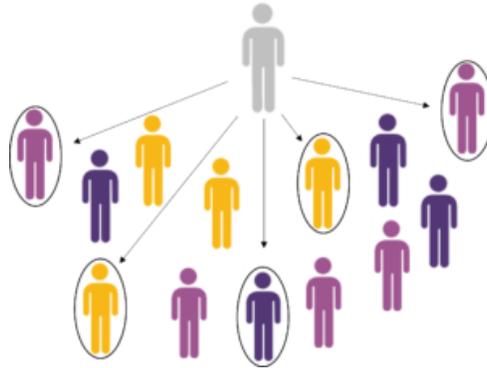


(b) PURPOSIVE/ JUDGMENTAL SAMPLING

In this sampling, also known as judgmental sampling the researcher purposely chooses persons who, in his judgment about some appropriate characteristic required of the sample members, are thought to be relevant to the research topic and are easily available to him. For example, suppose, the researcher wants to study beggars. He knows the three areas in the city where the beggars are found in abundance. He will visit only these three areas and interview beggars of his choice and convenience. The manufacturers (of cosmetics, oils, garments, etc.) select test market cities because they are viewed as typical cities with demographic profiles closely matching the national profiles. Popular journals conduct surveys in selected metropolitan cities to assess the popularity of politicians and political parties or to forecast election results. Thus, in this technique, some variables are given importance and it represents the universe but the selection of units is deliberate and based on prior judgment.

For example, imagine a researcher who wants to study public policy issues for a focus group. The researcher might purposely select participants with expertise in economics, law, and public administration to take advantage of their knowledge and ensure a depth of understanding.

Purposive sampling



(c) QUOTA SAMPLING

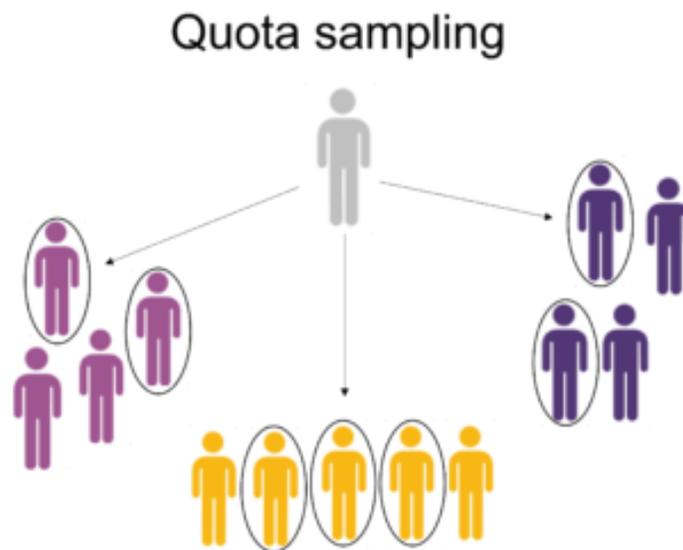
This is a version of stratified sampling with the difference that instead of dividing the population into strata and randomly choosing the respondents, it works on ‘quotas’ fixed by the researcher. In the example of studying 50 MBA students from 150 students in five institutions, the researcher fixes the quota of 10 students from each institution, out of which five will be boys and five girls. The choice of the respondents is left to the interviewer. Determining quotas depends on a number of factors related to the nature and type of research. For instance, the researcher might decide to interview three boys out of five boys (from one MBA institution) from final year and two from previous year, or two studying the morning course (of two years) and three studying the evening course (of three years).

Quota can also be fixed according to their proportion in the entire population. For instance, for studying the attitudes of persons towards use of loudspeakers in religious places in one educational institution, with 100 males and 50 females belonging to different religions, quota can be fixed in the ratio of one female for every two males.

Further, quota may be fixed on the basis of number of persons in each of the three religious groups.

The advantages of quota sampling are:

- (1) It is less costly than other techniques.
 - (2) It does not require sampling frames.
 - (3) It is relatively effective.
 - (4) It can be completed in a very short period of time. **Its limitations are:**
- (1) It is not representative.
 - (2) It has interviewer's bias in the selection.
 - (3) Estimating sampling error is not possible.
 - (4) Strict control of fieldwork



For example, in a survey on a college campus to assess student interest in a new policy, the researcher should establish quotas aligned with the distribution of student majors, ensuring representation from various academic disciplines. If the campus has 20% biology majors, 30% engineering majors, 20% business majors, and 30% liberal arts majors, participants should be

recruited to mirror these proportions.

(d) SNOWBALL SAMPLING

In this technique, the researcher begins the research with the few respondents who are known and available to him. Subsequently, these respondents give other names who meet the criteria of research, who in turn give more new names. This process is continued until ‘adequate’ number of persons are interviewed or until no more respondents are discovered. For instance, in studying wife battering, the researcher may first interview those cases whom he knows, who may later on give additional names and who in turn may give still new names. This method is employed when the target population is unknown or when it is difficult to approach the respondents in any other way. Reduced sample sizes and costs are a clear advantage of snowball sampling. Bias enters because a person known to someone (also in the sample) has a higher probability of being similar to the first person. If there are major differences between those who are widely known by others and those who are not, there may be serious problems with snowball sampling.

CHECK YOUR PROGRESS-I

Q1) What is a stratified sample.

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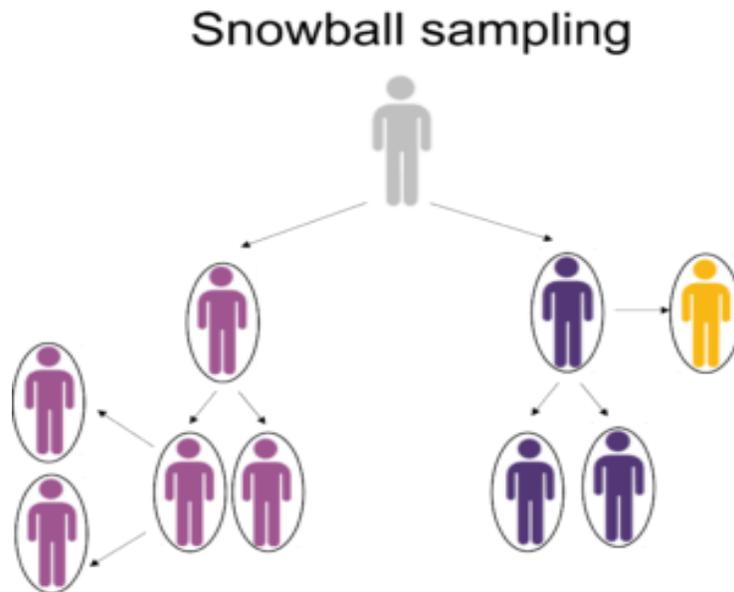
Q2) What is a cluster sample and when is it best used.

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Q3) What do you understand by a quota sampling method.

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For example, in a study focusing on understanding the experiences and challenges of individuals in hidden or stigmatized communities (e.g., LGBTQ+ individuals in specific cultural contexts), the snowball sampling technique can be employed. The researcher initiates contact with one community member, who then assists in identifying additional candidates until the desired sample size is achieved.



(e) CONSECUTIVE SAMPLING

Consecutive sampling is similar to convenience sampling with a slight variation. The researcher picks a single person or a group of people for sampling. Then the researcher researches for a period of time to analyze the result and move to another group if needed.

For example, in researching the prevalence of stroke in a hospital, instead of randomly selecting patients from the entire population, the researcher can opt to include all eligible patients admitted over three months. Participants are then consecutively recruited upon admission during that timeframe, forming the study sample.

11.5 Difference between Probability sampling vs Non-probability Sampling Methods

The below table shows a few differences between probability sampling methods and non-probability sampling methods.

<u>Probability Sampling Methods</u>	<u>Non-probability Sampling Methods</u>
1. Probability Sampling is a sampling technique in which samples taken from a larger population are chosen based on probability theory.	Non-probability sampling method is a technique in which the researcher chooses samples based on subjective judgment, preferably random selection.
2. These are also known as Random sampling methods.	These are also called non-random sampling methods.
3. These are used for research which is conclusive.	These are used for research which is exploratory.
4. These involve a long time to get the data.	These are easy ways to collect the data quickly.
5. There is an underlying hypothesis in probability sampling before the study starts. Also, the objective of this method is to validate the defined hypothesis.	The hypothesis is derived later by conducting the research study in the case of non-probability sampling.

11.6 Uses of probability sampling

Probability sampling methods find widespread use across diverse research disciplines because of their ability to yield representative and unbiased samples. The advantages of employing probability sampling include the following:

- **Representativeness**

Probability sampling assures that every element in the population has a non-zero chance of being included in the sample, ensuring representativeness of the entire population and decreasing research bias to minimal to non-existent levels. The researcher can acquire higher-quality data via probability sampling, increasing confidence in the conclusions.

- **Statistical inference**

Statistical methods, like confidence intervals and hypothesis testing, depend on probability sampling to generalize findings from a sample to the broader population. Probability sampling methods ensure unbiased representation, allowing inferences about the population based on the characteristics of the sample.

- **Precision and reliability**

The use of probability sampling improves the precision and reliability of study results. Because the probability of selecting any single element/individual is known, the chance variations that may occur in non-probability sampling methods are reduced, resulting in more dependable and precise estimations.

- **Generalizability**

Probability sampling enables the researcher to generalize study findings to the entire population from which they were derived. The results produced through probability sampling methods are more likely to be applicable to the larger population, laying the foundation for making broad predictions or recommendations.

- **Minimization of Selection Bias**

By ensuring that each member of the population has an equal chance of being selected in the sample, probability sampling lowers the possibility of selection bias. This reduces the impact of systematic errors that may occur in non-probability sampling methods, where data may be skewed toward a specific demographic due to inadequate representation of each segment of the population.

11.7 Uses of non-probability sampling

Non-probability sampling approaches are employed in qualitative or exploratory research where the goal is to investigate underlying population traits rather than generalizability. Non-probability sampling methods are also helpful for the following purposes:

- **Generating a hypothesis**

In the initial stages of exploratory research, non-probability methods such as purposive or convenience allow researchers to quickly gather information and generate hypothesis that helps build a future research plan.

- **Qualitative research**

Qualitative research is usually focused on understanding the depth and complexity of human experiences, behaviors, and perspectives. Non-probability methods like purposive or snowball sampling are commonly used to select participants with specific traits that are relevant to the research question.

- **Convenience and pragmatism**

Non-probability sampling methods are valuable when resource and time are limited or when preliminary data is required to test the pilot study. For example, conducting a survey at a local shopping mall to gather opinions on a consumer product due to the ease of access to potential participants.

11.8 LET US SUM UP

It can be concluded that a sample is a representation of the population. It is divided into the main type's probability and non-probability.

11.9 GLOSSARY

1. **Population:** The entire group of individuals or items that the researcher is interested in studying.
2. **Sample:** A smaller, representative subset of the population that is selected for study.
3. **Sampling:** The process of selecting a sample from the population.
4. **Target Population:** The specific group of individuals that the research aims to generalize its findings to.
5. **Study Population:** The subset of the target population that is accessible and available for the study.
6. **Sampling Frame:** A list of all the elements in the study population from which the sample will be drawn.
7. **Probability sampling:** Uses random selection, ensuring each individual has a known chance of being selected. This helps create a representative sample.
8. **Non-Probability sampling:** Does not use random selection. It's often used when probability sampling is not feasible or practical.

11.10 SELF ASSESSMENT QUESTIONS

Q1. Define the term sampling.

Q2. Differentiate between probability sampling and non-probability sampling.

11.11 LESSON END EXERCISE

- **Multiple Choice Questions**

Question 1:

Choose the correct option regarding the sampling method?

- A) the sample is the population's part
- B) it helps in determining sampling error
- C) sampling saves money, time, and energy
- D) all these options are correct

Question 2:

What do we say to all units aggregate that's about a study?

- A) sample
- B) unit

- C) universe or population
- D) frame

Question 3:

What refers to elements from where you choose the samples for the research?

- A) infinite population
- B) finite population
- C) sampling population
- D) target population

Question 4:

What do we call the population value?

- A) statistic
- B) parameter
- C) data
- D) variable

Question:5

What do you understand by probability sampling?

- A) univariate analysis
- B) bi-variate analysis
- C) multiple choices
- D) random sampling

Question:6

Out of these, which is not a probability sampling?

- A) cluster sampling
- B) stratified sampling
- C) quota sampling
- D) simple random sampling

11.12 ANSWER KEY (LESSON END EXERCISE)

Answers: 1-D, 2-C, 3- D, 4-B, 5-A, 6-C

11.13 SUGGESTED READINGS

1. Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
2. Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.
3. Russell, Ackoff, *Design of Social Research*, University of Chicago Press, Chicago, 1961.

QUESTIONNAIRE AND SCHEDULE

STRUCTURE

- 12.0 Learning Objectives**
- 12.1 Introduction**
- 12.2 Meaning of Questionnaire**
- 12.3 Format of Questionnaire schedule**
- 12.4 Type of Questions**
- 12.5 Steps in Questionnaire Construction**
- 12.6 Pre-Testing of Questionnaire**
- 12.7 Advantages of Questionnaire**
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- 12.9 Meaning of Schedule**
- 12.10 Definition of schedule**
- 12.11 Purpose of schedule**
- 12.12 Types of schedules**
- 12.13 Steps in framing a schedule**
- 12.14 Advantages of schedule**
- 12.15 Disadvantages of schedule**
- 12.16 Difference between questionnaire and schedule**
- 12.17 Let Us Sum Up**

12.18 Glossary

12.19 Self-Assessment Questions

12.20 Lesson End Exercise

12.21 Answer Key

12.22 Suggested Readings

12.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson, you will be able to:

- **understand the meaning of the questionnaire.**
- **examine the steps in questionnaire construction.**
- **know the advantages of the questionnaire.**

12.1 INTRODUCTION

The purpose of the research determines whether the survey procedure should be structured or unstructured. Generally, the structured approach is chosen when hypotheses are to be tested while unstructured approach is used when an exploratory study is to be conducted. The structured procedure improves the quality of the data by minimizing the measurement error. In this procedure, the data are collected either through self-administered questionnaires or through face-to-face interviews or by the combination of these two methods. We will explore, in this chapter, some fundamental issues pertaining to the nature, structure, content, design and construction of both. We will concentrate primarily on questioning rather than strictly on questionnaires or interview schedules. For instance, type of questions, content of questions, phrasing of questions and sequence of questions are as relevant to questionnaires as to schedules.

12.2 MEANING OF QUESTIONNAIRE

Questionnaire is the structured set of questions usually sent by mail, though sometimes it is delivered by hand also. The hand delivery could be at home, school/ college, office, organization, and so on. Questionnaire is described as “a document that contains a set of questions, the answers to which are to be provided personally by the respondents.”

The importance of the survey is explained to the respondents through a converting

letter. Usually, a self-addressed stamped envelope is sent to the respondents along with the questionnaire to reduce their expenses. The follow-up request for returning the questionnaire is made through repeated letters.

Questionnaire is used as a tool when: (i) very large samples are desired, (ii) costs have to be kept low, (iii) the target groups who are likely to have high response rates are specialized, (iv) case of administration is necessary, and (v) moderate response rate is considered satisfactory.

In deciding whether questionnaire is an appropriate tool for data collection, following four aspects must be born in mind (Black and Champion, 1976:379): (1) Identify situations for which questions are best suited. (2) Discuss advantages and disadvantages of a questionnaire as a research tool of data collection. (3) Delineate dimensions to be associated with questionnaire construction. (4) Differentiate between several types of questionnaires.

For analytical purposes, the following five types of questionnaires may be identified:

- (i) **Topic:** Whether the questionnaire deals with one specific topic or several topics.
- (ii) **Size:** Whether the questionnaire is small (printed on post card) or middle- sized (5-6 pages) or large-sized (9-10 pages) i.e., we may classify them as short and long questionnaires.
- (iii) **Target:** Whether the questionnaire is addressed to specific group of people or to general people.
- (iv) **Type of response required:** Whether the questions are closed, opened or combination of the two types.
- (v) **Method of administration:** Whether the questionnaire is mailed or it is personally administered to subjects to complete in the presence of the researcher or his assistant.

12.3 FORMAT OF QUESTIONNAIRE SCHEDULE

Babbie has explained following guidelines for framing and asking questions:

1. Questions should be clear and unambiguous

The question like, “What do you think about the proposed peace plan for Kashmir?” may not be clear to respondent who does not know anything about the peace plan.

2. Questions should be relevant

Sometimes the respondents are asked to give opinions on issues on which they have never given any thought, e.g., “What is your opinion on the economic policies of the BJP, the Congress and CPI parties”? Such questions are bound to be disregarded by the respondents.

3. Questions should be short

Long and complicated items are to be avoided. The respondent should be able to read an item quickly, understand its meaning and think of an answer without difficulty.

4. Negative questions should be avoided

The appearance of a negation in the question paves the way for easy misinterpretation for example, asking to agree or disagree with the statement, “India should not recognise the military rule Fiji” a sizeable portion of the respondents will not read the word ‘not’ and answer on that basis.

5. Biased terms should be avoided

Prejudice affects the answers. For example, the question, “Have military rulers in the neighboring country always hampered our country’ progress?” may encourage some respondents to particular response more than other questions do.

6. Respondents must be competent to answer

The researcher should always ask himself whether the respondents he has chosen are competent enough to answer questions on the issue of research. For example, asking daily wage labourers to give their views such a way that they describe the same format, e.g., “The next question will ask you if you agree or disagree with 10 different statements.” This is called ‘providing transitions.

7. Put questions in a logical order. Questions should be put in such a logical order that it may not appear that the respondent has to switch over suddenly from abstract to direct questions or from one topic to another e.g., asking questions on family, followed by burning problems in the country respondent’s career aspirations, communal riots in the state, functioning of political elite, and so on, is not the logical order of questions. Oppenheim (1966-38-39) Phillips (1971-141) and Bailey (1982-141) have suggested applying funnel technique in ordering questions. By this, they mean that general broad and open -ended questions be asked first followed by more specific questions. The easy questions put the respondent at ease A ‘filter’ question is one that determines whether future questions are applicable to the respondent for example, first ask whether the respondent smokes and then ask how many cigarettes in a day.

Sometimes answer to one question will affect answer of another seriously diminishes the value of the questionnaire there. Therefore, proper ordering of questions is very important. For example, here are two questions A and B.

- A. Do you consider your class teacher an ideal teacher?
- B. Where are the qualities of an ideal teacher?

Here question B should come before question A. Here is another example of ordering questions:

- A How satisfied are you with the economic policy of the present Prime Minister?
- B. How do you rate the performance of the present Prime Minister?

Question B should precede A because a person who is dissatisfied with the Prime Minister's economic policy (and perhaps nothing else) might rate Prime Minister's leadership lower than otherwise. Questions of recall should also be organised according to their natural sequence.

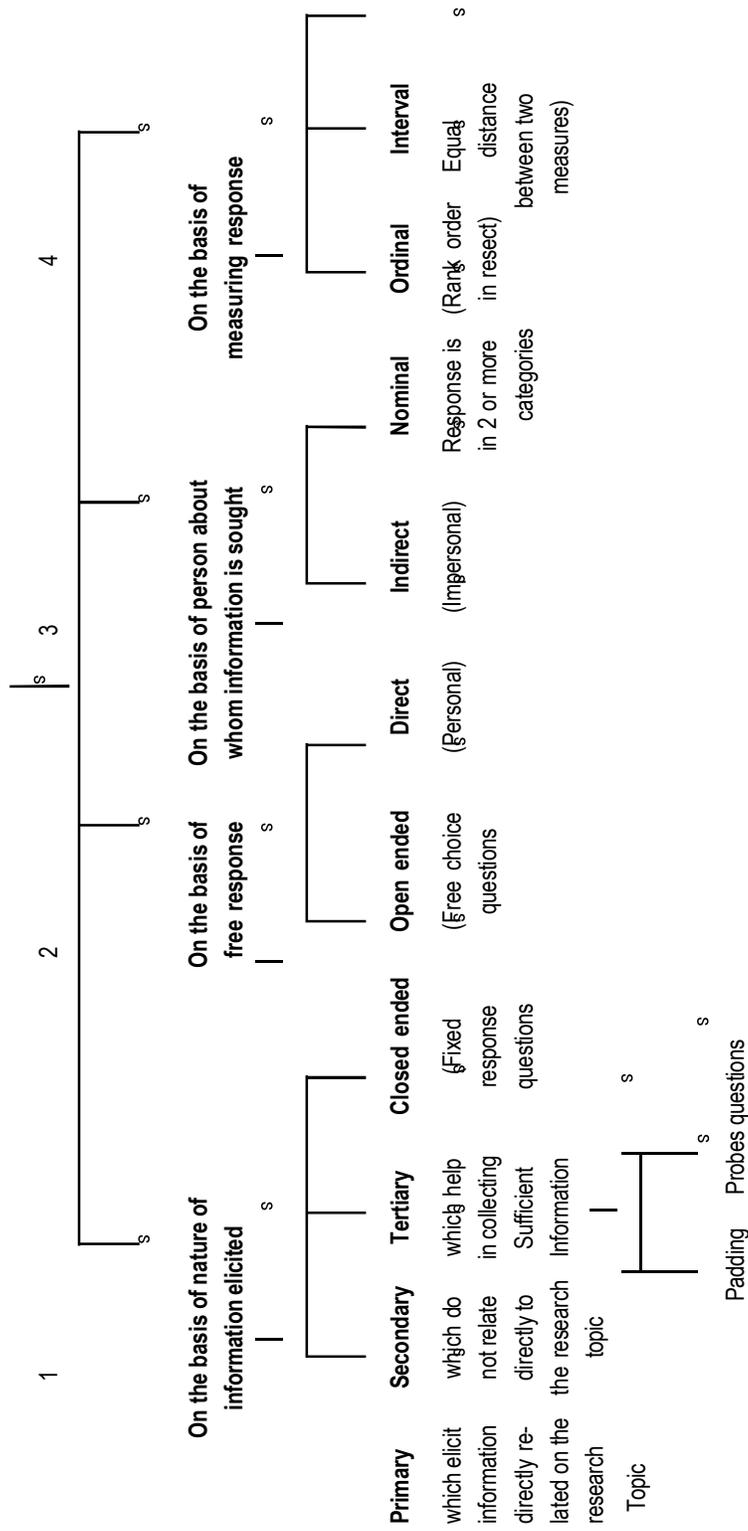
12.4 TYPES OF QUESTIONS

Questions in the questionnaire/ schedule vary with respect to a number of criteria. Diagram 1 on the next page describes four bases for classifying questions. We will briefly describe each one of them separately.

- **Primary, secondary and tertiary questions**

On the basis of the nature of information elicited, question may be classified as primary, secondary tertiary primary questions elicit information directly related to the research topic. Each question provides information about a specific aspect of the topic. For example, for determining the type of family (whether it is husband -dominant, wife dominant, equalitarian), the question “who takes decisions in your family ‘is a primary question. Secondary questions elicit information which do not relate directly to the topic, i.e., the information is of secondary importance. They only guard the truthfulness of the respondents, e.g., in the above topic (on type of family), the question “who decides the nature of gift to be given in marriage to family relative ‘or’ “who finally selects the boy with whom the daughter is to be married” are the secondary questions. This tertiary question is of neither primary nor of secondary importance. These only establish a framework that allows convenient data collection and sufficient

Diagram: 1
Showing Types of Questions Question Types



information without exhausting or biasing the respondent. These questions are two sub types; (a) padding questions, and (b) probe questions. The former questions act as a breather and are usually placed before or after the sensitive questions; the latter questions only expand information given by the respondent.

2. Closed-ended and open-ended questions

The closed-ended questions are the fixed-choice questions. They require the respondent to choose a response from those provided by the researcher. Here is one example: “Whom do you consider an ideal teacher?” (a) Who takes teaching seriously?

(b) who is always available to students for discussions and guidance; (c) whose approach to students’ problems is flexible; (d) who does not believe in punishing students; (e) who takes interest in co-curricular and extra-curricular activities; and (f) who believes in teaching not only through lectures but also through life-situations.

The open-ended questions are free-response questions which require respondents to answer in their own words. For example: (1) whom do you consider an ideal teacher? (2) How would you rate the performance of the last government?
(3) What do you feel is the most important issue facing India today?

The following questions illustrate the difference between the open-ended and the closed-ended forms:

(closed): After the introduction of profit-sharing scheme in your factory, would you say that the annual production has increased or decreased or has remained the same?

Increased/Decreased/Same

(open): How would you describe the production in your factory this year compared to last year?

(closed): Do you have harmonious/normal/conflicting relations with your spouse ?

(open): How would you describe the relations with your spouse?

(open): How would you described the government’s scheme of training and financial help to scavengers in weaning them away from the traditional?

(closed): Do you think that government's scheme of training and financial help to scavengers has been fully successful/partially successful/failure?

Since open-ended questions entail more work both for the researcher and the respondents, these are used sparingly in the questionnaires. Some scholars use a middle path in using closed and open questions. They use open questions in preliminary interviews or in pre-tests to determine what respondents say spontaneously; this information then is used to construct closed questions for the final questionnaire. However, this method is not followed by many researchers.

The advantages of open-ended questions are:

1. Since the researcher does not know all the response categories, he finds out the appropriate answer categories from the respondents.
2. The researcher gets insight in respondent's understanding.
3. When the total answers categories are very large (say, 50 or more), it would be awkward to list all of them on a questionnaire; but if some were omitted then there would be appropriate answers available for all respondents.
4. Since the respondent gets freedom in answering, the researcher gets more and varied information based on the respondent's logic and thought processes. Sometimes, the information and responses.

CHECK YOUR PROGRESS-I

1) Differentiate between open ended and close-ended questions.
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3. Nominal, ordinal and interval questions

Nominal question is one in which its response falls in two or more categories, e.g., male/female; rich/poor; married/unmarried; rural/urban; illiterate/educated; Shia/ Suni;

Hindu/Muslim. However, the categories have no rank order. Nominal question is also called classification scale. Ordinal question is one in which the responses are placed in rank order of categories. The categories may be ranked from highest to lowest, greatest to least, or first to last. There is no implication that there is an equal distance between succeeding categories. Here are some examples:

1. Smoking: regularly/occasionally/never
2. Reserving 33 per cent seats for women in Parliament: Agree/disagree/ don't know
3. Relations with colleagues in office:excellent/satisfactory/dissatisfactory/ can't say

Ordinal scales are sometimes referred to as ranking scales. Interval question is one in which the distance between two numbers is equal. For example:

1. Present age: 10 or below/11-20/21-30/31-40/41 and above
2. Income per annum: Below Rs. 18,000/18,000-36,000/36,000- 54,000/54,000-72,000/Above 72,000
3. Age at marriage: Below 18/18-22/22-26/26-30/Above 30

Other types of questions

(a) Contingency questions

A contingency question is one whose relevance to the respondent is determined by his response to an earlier screening question, e.g.

- Q.1. Are you in favor of using some methods in controlling birth?
- Q.2. Do you prefer vasectomy/condom/pill/safe period?

The second question is a contingency question. Another example could be:

- Q.1. Do you use this product?
- Q.2. Since when are you using this product?

Here Q.2. is a contingency question. The direction to this type of question will be: If yes, to Q.1 answer Q.2; if no, skip to Q.3.

The need for the contingency question arises because every question need not be relevant to all respondents. The use of contingency questions can be reduced by drawing a homogeneous sample.

The preferable format for contingency question would be as follows:

Q. Do you go to cinema houses for watching movies?

(a) Yes

(b) No

If yes, how often do you go? (a) once in a month; (b) once of few months; (c) once or twice in a year.

(b) Filter questions

These questions aim at eliciting information related to a general aspect of the research topics and are usually followed by more specific questions, e.g., “Do you smoke”? Contingency questions are geared towards eliciting additional and more specific information on an issue already addressed by a filter question e.g., “Do you (being a girl) smoke?”

12.5 STEPS IN QUESTIONNAIRE CONSTRUCTION

Questionnaires are constructed in a systematic manner. The process goes through a number of interrelated steps. The most commonly steps are (Sarantakos, 1998:239-40):

1. **Preparation:** The researcher thinks of various items to be covered in the questionnaire, arrangement of these items in relation to one another, and taking into consideration questions prepared and used in other similar studies.
2. **Constructing the first draft:** The researcher formulates a number of questions including direct/indirect, closed/open-ended and primary/secondary/tertiary questions.
3. **Self-evaluation:** The researcher thinks about relevance, symmetry, clarity in language, etc.
4. **External evaluation:** The first draft is given to one or two experts/colleagues for scrutiny and suggestions for changes.
5. **Revision:** After receiving suggestions, some questions are eliminated, some changed and some new questions added.
6. **Pre-test or pilot study:** A pre-test or a pilot study is undertaken to check the suitability of the questionnaire as a whole.
7. **Revision:** The minor and major changes may be made on the basis of experience gained in pre-testing.

8. **Second pre-testing:** The revised questionnaire is then subjected to a second test and amended, if necessary.
9. **Preparing final draft:** After editing, checking spelling, space for response, pre-coding, and the final draft is prepared.

12.6 PRE-TESTING OF QUESTIONNAIRE

Howsoever carefully the questionnaire might have been prepared; there could be some ambiguities, and some confusing, missing, inappropriate, redundant, inadequate or unanswerable questions. There could also be insufficient space for answering open-ended questions. It is, therefore, necessary to pre-test the questionnaire and remove such questions. For, this the questionnaire may be administered to a few persons who are similar to those who are to be studied ultimately. Pre-testing should not be done on the actual respondent. Many “don’t know” answers may indicate poorly-worded questions which need to be deleted. The pre-test should be conducted in the same manner as the final study. If it is a mailed questionnaire, the pre-test should also be mailed. If it is interviewing schedule, the pre-test should be through interview.

After the pre-test, the researcher has first to deal with unanswered questions, followed by those questions which get similar responses from all respondents and may therefore be deleted. He should then take up suggestions, comments and opinions given by the respondents for adding some words or deleting some offending questions. However, the researcher need not accept all suggestions of the respondents.

12.7 ADVANTAGES OF QUESTIONNAIRE

Questionnaires, as a tool of data collection, have strengths and weaknesses and thus advantages and disadvantages. Some advantages of questionnaires, as pointed out by Singleton and Straits (1999: 259), Selltiz et al (1976) and Sarantakos (1998:224) are listed below:

1. Lower cost

Questionnaires are less expensive than other methods. Even the staff required is not much as either the researcher himself may mail or one or two investigators may be appointed for hand-distributing the questionnaires. Giving salary and TA/DA to the investigators and the research officers increases the cost of the survey. In questionnaire (besides the cost of printing) the researcher has only to spend money on postage for sending the questionnaires and stamped envelopes for getting back the filled-in questionnaires or on follow-up letters. The mailed questionnaires thus cost less.

2. Time saving

Since the respondents may be geographically dispersed and sample size may be very large, the time required for getting back the questionnaires may be little greater but usually less than that for face-to-face interviews. Thus, since all questionnaires are sent simultaneously and most of the replies are received in 10-15 days, schedules take months to complete. In simple terms, questionnaires produce quick results.

3. Accessibility to widespread respondents

When the respondents are separated geographically, they can be reached by correspondence which saves travel cost.

4. No interviewer's bias

Since the interviewer is not physically present at interviewee's place, he cannot influence his answers, either by prompting or by giving his own opinion or by misreading the question.

5. Greater anonymity

The absence of the interviewer assures anonymity which enables respondent to express free opinions and answers even to socially undesirable questions. The absence of the interviewer assures privacy to the respondents because of which they willingly give details of all events and incidents they would have not revealed otherwise.

6. Respondent's convenience

The respondent can fill-in the questionnaire leisurely at his convenience. He is not forced to complete all questions at one time. Since he fills up the questionnaire in spare time, he can answer easy questions first and take time for difficult questions.

7. Standardized wordings

Each respondent is exposed to same words and therefore there is little difference in understanding questions. The comparison of answers is thus facilitated.

8. No variation

Questionnaires are a stable, consistent and uniform measure, without variation.

12.8 LIMITATIONS OF QUESTIONNAIRE

1. The mailed questionnaires can be used only for educated people. This restricts the number of

respondents.

2. The return rate of questionnaires is low. The common return rate is 30 to 40 per cent.
3. The mailing address may not be correct which may omit some eligible respondents. Thus, the sample selected many a time is described as biased.
4. Sometimes different respondents interpret questions differently. The misunderstanding cannot be corrected.
5. There may be bias in the response selectivity because the respondent having no interest in the topic may not give response to all questions. Since the researcher is not present to explain the meaning of certain concepts, the respondent may leave the question blank.
6. Questionnaires do not provide an opportunity to collect additional information while they are being completed.
7. Researchers are not sure whether the person to whom the questionnaire was mailed has himself answered the questions or somebody else has filled up the questionnaire.
8. Many questions remain unanswered. The partial response affects the analysis.
9. The respondent can consult other persons before filling in the questionnaire. The responses, therefore, cannot be viewed as his opinions.
10. The reliability of respondent's background information cannot be verified. A middle-class person can identify himself as rich person or a person of intermediate caste can describe himself as upper-caste person.
11. Since the size of the questionnaire has to be kept small, full information cannot be secured from the respondents.
12. There is lack of depth or probing for a more specific answer.

12.9 MEANING OF SCHEDULE

The set of structured questions in which answers are recorded by the interviewer himself is called interview schedule or simply the schedule. It is distinguished from the questionnaire in the sense that in the latter (questionnaire) the answers are filled in by the respondent himself. Though the questionnaire is used when the respondents are educated the schedule can be used both for the illiterate and the educated respondents. The questionnaire is used when the respondents are scattered in a large geographical area but the schedule is used when the respondents are located in a small area so that they can be personally contacted. In the questionnaire, the size, physical

appearance and attractiveness are more important than in the schedule in securing information from the respondents. The wordings of the questions in the questionnaire have to be simple since the interviewer is not present to explain the meaning to the respondent. In the schedule, the investigator gets the opportunity to explain difficult terms.

The questions in the questionnaire/schedule seek three types of information: (i) demographic information which identifies the interviewee, (ii) substantive information which is focused on the subject under study, and (iii) additional information which may support the substantive information. However, the construction of the schedule or the questionnaire involves the same considerations. We will, therefore, discuss their formation together.

12.10 DEFINITION OF SCHEDULE

Schedule is also a set of questions which is filled in by investigator who is made responsible to collect information. The investigator approaches the respondent and records the responses of the respondent. In some cases, respondent is encouraged to record the answers to the questions with the help of investigator.

The success of this method is based on selection and training of investigator, to collect information. Investigator must have competency for cross examination, if necessary, investigator's personal qualities like honest hard work will improve the quality of the work. This system is very useful for extensive enquiries. It is very expensive still normally adapted by state and large organization. Census survey is conducted by this method.

12.11 PURPOSE OF SCHEDULE

The main purposes of schedule are threefold: i) to provide a standardized tool for observation or interview in order to attain objectivity, ii) to act as memory ticker i.e., the schedule keeps the memory of the interviewer/observer refreshed and keeps him reminded of the different aspects that are to be particularly observed, iii) to facilitate the work of tabulation and analysis.

12.12 TYPES OF SCHEDULES

1. Rating schedule

In the field of business guidance, psychological research, and social research, the rating schedules

are used to assess the attitudes, opinions, preferences, inhibitions and other like elements. As evident from the term 'rating', in these schedules, the value and trend of the above-mentioned qualities is measured.

2. Documents schedule

The schedules of this type are used to obtain data regarding written evidence and case histories. In these schedules, those terms are included which occur frequently in documents and are to be generally found in case histories.

3. Institutional surveys forms or evolutionary schedules

The use of these schedules, as is evident from the name, is made to gather data about specialized institutions or agencies. The form and the size of evolutionary schedules is determined by the nature and the complexity of the problems of an institution, more complex the problem, bigger the size of the schedule.

4. Observation schedules

In these schedules, observer records the activities and responses of an individual or a group under specific conditions. The observation schedules may need one or more research worker to be completed. The main purpose of an observation schedule is to verify some information.

5. Interview schedules

A fifth form of schedule is sometimes treated independently and at other times considered included in the previous type. In an interview schedule, an interviewer presents the questions of the schedule to the interviewees and records their response on blank spaces.

12.13 STEPS IN FRAMING A SCHEDULE

1. Study the different aspects of the problem

The problem under study should first of all be split up into various aspects. The determination of these aspects will depend upon clear understanding of the problem under study.

2. Sub-divide the problem to get necessary information

Each aspect has again to be broken up into a number of sub-parts. These sub-parts should be quite exhaustive to give a full and complete picture of the aspect under study.

3. The framing of actual questions.

Care should be taken to see that the questions convey the exact sense, are easily followed by the response and they will be willing to supply information without any hesitation, bias or distortion of facts.

4. Serialisation of questions

In order to obtain well-organised information, it is necessary that the questions should be presented to the respondents in a well-ordered serial. It has been experienced in various field studies that the change in the order of questions affects the answers adversely.

5. Testing the validity of schedule

Whatever may be the degree of precaution taken; some slips are bound to be left out and cannot be located unless the schedule has been put into operation.

12.14 ADVANTAGES OF SCHEDULE

1.Economical: since the questionnaire approach makes it possible to cover, at the same time, a large number of people spread over a large territory, it is decidedly more economical in terms of money, time and energy. Other methods do not afford such a facility.

2.Time saving: besides saving money, the mailed schedule also saves time. Simultaneously, hundreds of persons are approached through it whereas if they are to be interviewed it may take a very long time.

3.Suitable in special type of response: the information about certain problems can be best obtained through questionnaire method. For example, the research about sexual habits, marital relations, dreams etc., can be easily obtained by keeping the name of respondents anonymous.

4.Ensures anonymity: as the respondents are not required to indicate their names on the questionnaires, they feel free to express their views and opinions. Anonymity is a meaningful characteristic of questionnaire method. In view of its anonymity the questionnaire is more effective than an interview.

5.Less pressure on the respondents: the method places less pressure on the subject for immediate response and gives more time to the respondents for properly answering questions.

6.Uniformity: the questionnaire, by its very nature, is an impersonal technique. Uniformity from one measurement situation to another is provided by virtue of its standardized wordings of questions, standardized sequence of questions and fixed or standardized instructions for recording responses.

12.15 DISADVANTAGES OF SCHEDULE

1. **Illiterate and less educated:** one of the major limitations of the questionnaire is that it can be administered only on subjects with a considerable amount of education. Complex questionnaire requiring elaborate written replies can be used indeed on a very small percentage of population.
2. **Proportion of returns is usually low:** in a mailed questionnaire, the proportion of returns is usually low, it may sometimes be as low as 10%.
3. **Mis-interprets/ unintelligible reply:** in a questionnaire, if the respondent misinterprets a question or writes his reply unintelligibly, there is very little that can be done to correct this. In this approach there is no facility for repeating questions, explaining them or seeking clarification of a particular response.

12.16 DIFFERENCE BETWEEN QUESTIONNAIRE AND SCHEDULE

SCHEDULE	QUESTIONNAIRE
i. Filled in by investigator.	i. Filled by the respondent
ii. More expensive	ii. Less expensive
iii. Low non-response	iii. High non-response
iv. Identify of respondent is known	iv. Identity of respondent is not clear
v. Process is fast as the information collected and filled in by investigator.	v. Process is slow as respondent do not return questionnaire immediately
vi. In schedule information is collected from illiterate respondent.	vi. A useful only where respondent is co-operative and literate.
vii. Coverage is restricted to visit of investigator	vii. Wide coverage of investigation is possible
viii. More accurate information can be collected.	viii. Risk of collecting wrong information
ix. Success related to honesty and competence of investigator.	ix. Success of this method relates to quality of questionnaire
x. Physical appearance will not affect the response.	x. Good physical appearance will have better response.
xi. Information can be collected from illiterate also	xi. Questionnaire can be used only when respondent is educated and cooperative
xii. Sample area should not be wider	xii. Wider distribution of sample is possible
xiii. Relatively more complete and correct information	xiii. Incomplete and wrong information is more

12.17 LET US SUM UP

Thus, to conclude questionnaire is the structured set of questions usually sent by mail through sometimes delivered by hand also whereas the schedule is the set of structured questions in which answers are recorded by the interviewer himself.

12.18 GLOSSARY

1. **Questionnaire:** A questionnaire is a research instrument consisting of a series of questions used to gather information from respondents. It's a versatile tool for collecting both quantitative and qualitative data, often used in market research, social sciences, and health studies.
2. **Questionnaire Design:** The process of creating a questionnaire, including choosing question types, wording, and layout.
3. **Closed-ended questions:** Questions with pre-defined answer options (e.g., multiple choice, true/false).
4. **Open-ended questions:** Questions that allow respondents to provide detailed, written answers.
5. **Schedule:** In research, a schedule is a structured data collection tool used by an interviewer to gather information directly from respondents through a series of pre-determined questions.

12.19 SELF ASSESSMENT QUESTIONS

Q1. Define the term questionnaire.

Q2. Differentiate between questionnaire and schedule.

Q3. Discuss any three advantages of the questionnaire.

12.20 LESSON END EXERCISE

- **MULTIPLE CHOICE QUESTIONS**

1. Which of the following refers to the extent that all information collected in a questionnaire addresses a research question that will help the decision maker address the current business problem?

- a. relevant b. accuracy c. frequency d. counter balanced

2. A questionnaire that collects information that is valid is said to be:

- a. relevant b. accurate c. counterbalanced d. Balanced

3. Another term for fixed-alternative questions is _____ questions.

- a. open-ended response b. closed-ended c. pivot d. concise

4. Compared to open-ended response questions, fixed-alternative questions:

a. requires less interviewer skill b. take less time c. are easier for the respondent to answer d. all of the above

5. All of the following are guidelines that help prevent the most common mistakes in designing questions except:

- a. avoid personal questions b. avoid complexity c. avoid leading questions
d. avoid double-barreled questions

12.21 ANSWER KEY (LESSON END EXERCISE)

Answer: 1-A, 2- B, 3-B, 4- D, 5-A

12.22 SUGGESTED READINGS

- Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
- Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.
- Russell, Ackoff, *Design of Social Research*, University of Chicago Press, Chicago, 1961.
- Singleton, Royce and Bruce C. Straits, *Approaches to Social Research* (3rd ed.) Oxford University Press, New York, 1989.

INTERVIEW

STRUCTURE

- 13.0 Learning Objectives**
- 13.1 Introduction**
- 13.2 Meaning of Interview**
- 13.3 Functions of Interview**
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- 13.5 Types of Interviews**
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13.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- **Understand the meaning of interview.**
- **Know various types of interview methods.**
- **Understand various characteristics of interview.**

13.1 INTRODUCTION

Interview is verbal questioning. As a research tool or as a method of data collection, interview is different from general interviewing with regard to its preparation, construction and execution. This difference is that: research interview is prepared and executed in a systematic way, it is controlled by the researcher to avoid bias and distortion, and it is related to a specific research question and a specific purpose.

13.2 MEANING OF INTERVIEW

Bingham and Moore (1924) have described the interview as “a conversation with a purpose”. This definition is too broad to be accepted in research field because the purpose (of interview) could be therapeutic, psychiatric, selection for a job, selection for admission to a professional institution, publicity of a film actor, and so on. In research field, Lindzey Gardner (1968: 527) has defined interview as “a two- person conversation, initiated by the interviewer for the specific purpose of obtaining research-relevant information and focused by him on the content specified by the research objectives of description and explanation”. In the research interview, thus, the interviewer asks specific questions pertaining to research objectives/criteria and the respondent restricts his answers to specific questions posed by the interviewer.

13.3 FUNCTIONS OF INTERVIEW

The two major functions of the interview technique are described as under:

1) Description:

The information received from the respondent provides insight into the nature of social reality. Since the interviewer spends some time with the respondents, he can understand their feelings and attitudes? Early, and seek additional information wherever necessary and information meaningful for him. Suppose in a sociological of management of canal water for irrigation, the respondents that in a particular area, water can be provided to 400 more diverting the canal. The physical presence of the interviewer variable him to find that the suggestion is impractical because the arisen area is much above the level of the canal and water cannot benefited, and

the area is outside the command area. This knowledge was not having been possible if the information would have been collected through questionnaire technique.

ii) Exploration

Interview provides insight into unexplored dimensions of the probably in the problem of “exploitation of widows by the in-laws and the colleagues”, it is the personal interview with the victims which sales the interviewer to get details about widows’ position in the sport system, and their sticking to their traditional values which are their life variable and adjustment difficult. The interview can five to be effective exploratory device for identifying new variables study and for sharpening of conceptual clarity. Even the new highness can be bought off for testing. For example, in the study of problems faced by husbands and wives in inter-caste and inter-community marriage probing their attitudes, beliefs and behaviour patterns in conversable depth, one can come up with interesting data out different assets of adjustment.

13.4 CHARACTERISTICS OF INTERVIEW

Black and Champion (1976:3540-55) have pointed out the following characteristics an interview:

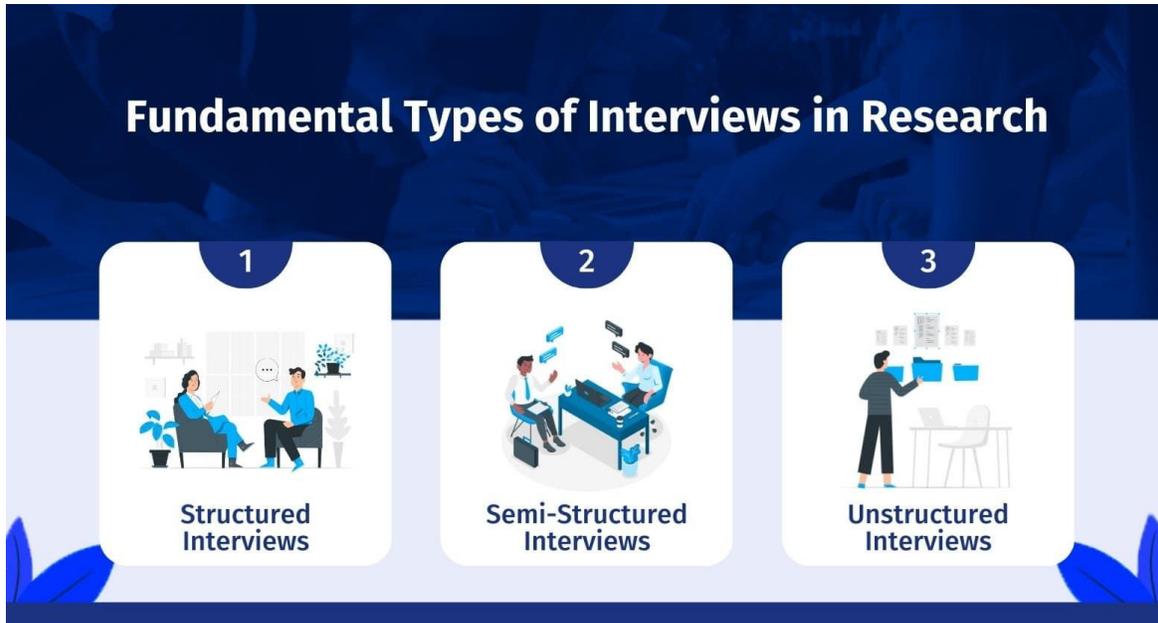
- Personal communication: There is a face-to face contact, conversational exchange and verbal interaction between the interviewer and the respondent.
- Equal status. The status of the interviewer and the interviewee is equal.
- Questions are asked and responses received verbally.
- Information is recorded by the interviewer and not the respondent.
- The relationship between the interviewer and the interviewee, who are strangers to each other, is transitory.
- The interview is not necessarily limited to two persons. It could involve two interviewers and a group of respondents, or it could be one interviewer and two or more respondents.
- There is considerable flexibility in the format of the interview.

13.5 TYPES OF INTERVIEWS

There are many types of interviews which differ from one another in terms of structure, the interviewer’s role, number of respondents involved in the interview, etc.

Some types of interviews are employed in both quantitative and qualitative researches but others are used in one research type only.

TYPES OF INTERVIEWS



1. Structured, Semi- Structured and Unstructured Interviews

In the unstructured interview, there are no specifications in the wording of the questions or the order of the questions. The interviewer forms questions as and when required. The structure of these interviews is flexible, being presented in the form of guide. In simple words, in this interview, the interviewer has: (i) only the general nature of the questions in mind, (ii) has no prior indication of the specific issues on which the questions are to be asked, (iii) has not ordered questions in a particular way, and (iv) has no time-limit for continuing the interview. Thus, what is asked from one respondent in the beginning may be asked from the other respondent in the end and from yet other respondent in the middle. Similarly, some questions maybe asked from some respondents but not all respondents. The questions may not be worded in the same way. One or two particular facets may be concentrated in one interview but other facets in another interview. This type of interview is mostly used in qualitative research.

The advantages of this type of (unstructured) interview are: (1) the questions being asked spontaneously, the interview can be conducted in the form of natural conversation. (2) There is a greater possibility of exploring in an unrestricted manner. (3) Finding the interest of the respondent in a specific aspect of the problem, the

interviewer can focus his attention on that particular aspect.

But this type of interview has some limitations also: (1) the data obtained from different respondents cannot be compared with each other. (2) With no systematic control over asking questions, the reliability of the data becomes doubtful. (3) The obtained data cannot be quantified. (4) Much time can be wasted adding nothing or little to the knowledge already obtained. Time is also wasted in repetitions and unproductive conversations. (5) Some aspects may be left out in discussions, when conversation is focused on a few aspects. No wonder, the researchers prefer some degree of structuring their interviews.

The structured interview is based on the structured interview guide which is little different from the questionnaire. In reality, it is a set of specific points and definite questions prepared by the interviewer. It allows little freedom to make adjustments to any of its elements, such a content, wording, or order of the questions (Sarantakos, 1998:247). In these types of interviewing, the interviewer is expected to act in neutral manner offering the same impression to all the respondents. The purpose is to reduce the interviewer's bias to the minimum and achieve the highest degree of informality in procedure. This form of interview is employed in quantitative research.

In this interview, all dimensions, i.e., (a) specifying the setting of the interview, (b) Regulating questions and the range of responses, (c) controlling the interviewer's and the interviewee's characteristics, and (d) limiting the facets of the problem, are regulated.

- (a) Specifying the setting of the interview means fixing the place where the interview is to be conducted, determining the time for conducting the interview so that normal working of the respondents is not disturbed, and assuring confidentiality to the respondent so that he gives information freely.
- (b) Regulating questions and the range of responses means determining the questions and the order in which they are to be asked from all respondents. This requires either developing the interview schedule or the interview guide. The responses are regulated by offering one choice from several alternatives. Sometimes, the alternative responses are provided to the respondent indicating the range of responses from which an answer is to be selected.
- (c) Controlling interviewer-interviewee characteristics means developing such

relationship between the two that the respondent goes on giving information willingly and the interviewer goes on encouraging the respondent to continue talking.

- (d) Limiting the facets of the problem means determining in advance what the interviewer wants to find out from the respondents. This includes not only narrowing the range of items but also time for conducting the interview.

Somewhere between the structured and the unstructured interview, there exists semi-structured interview. It has characteristics of both. This method is used for both quantitative and qualitative researches.

In Semi-structured interview respondent guide with key questions but allows flexibility to probe deeper and ask follow-up questions, balancing structure and depth (most common).

2. Standardized v/s unstandardized interviews

In standardized interviews, answer to each question is standardized as it is determined by a set of response categories given for this purpose. The respondents are expected to choose one of the given options as the answer. For example, the alternative answers could be yes/no/don't know; agree/disagree, illiterate/less educated/ highly educated; for/against/undecided; and so on. This is mainly used in quantitative research. Unstandardized interview is one in which the responses are left open to the respondent. This is used mainly in qualitative research.

3. Individual v/s group interviews

Individual interview is one in which the interviewer interviews only one respondent at a time, while in group interview, more than one respondent are interviewed simultaneously. The group can be small say, of two individuals (e.g., husband and wife, or two co-workers in a factory, etc.) or large, say, of 10 to 20 persons (e.g., all students in a class).

4. Self-administered v/s other-administered interviews

In self-administered interview, the respondent is supplied a list of questions along with instructions for writing answers in the appropriate place on the interview form. In other-administered interview, the interviewer himself writes answers to questions on the response sheet.

5. Unique v/s panel interviews

Unique interview is one in which the interviewer collects entire information in one interview. However, he is not barred for approaching the interviewer for the second time for seeking additional information. In panel interview, the interviewer collects information from the same group of respondents two or more times at regular intervals. If different respondents are involved in various stages for asking the same questions, it is called trend study.

6. Soft v/s hard interviews

In soft interview, though the interviewer holds a secondary position in the process of data collection but he guides the respondents without putting any pressure on them. In hard interview, the interview resembles the police interrogation. The interviewer questions the validity and the completeness of the answers obtained, often warning the respondents not to lie and forcing them to give an answer when they hesitate. This type of interview appears more in quantitative than in qualitative form.

7. Personal v/s non-personal interviews

In the personal interview, there is a face-to-face contact between the interviewer and the interviewee, while in the non-personal interview there is no face- to-face relationship, but the information is collected through telephone, computer or some other medium.

8. Other types



- **Behavioral Interview**

During this type of interview, candidates are asked to give specific examples of how they have acted in the past. The idea behind this kind of interview is that what someone did in the past can be a sign of how they will act in the future. And by this interview, the company can also understand the interviewee's behavior through body language.

- **Panel Interview**

During a panel interview, three or more interviewers usually ask questions and evaluate the candidate's answers as a group. This is a good way to get a full picture of a candidate's skills and suitability for the job.

- **Group Types of Interviews**

Multiple people are interviewed at the same time in group interviews. This form of interview often focuses groups that are utilized on entry-level positions or employment in customer service to examine how well candidates get along with others and function as a team.

- **Case Interview**

During a case interview, candidates are given a business problem or scenario and asked to think about how to solve it. In the consulting and finance fields, this kind of interview is common.

- **Technical Interview**

A candidate's technical skills and knowledge are tested during a technical interview, usually in fields like engineering or software development. Most of the time, candidates are asked to solve problems or complete technical tasks.

- **Stress Interview**

During a stress interview, candidates are put under pressure or asked difficult or confrontational questions on purpose to see how they react in stressful situations. This kind of interview is used to see how well a candidate can deal with stress and hard situations.

- **Focused interview**

Focused interview is one which is focused on a specific topic. In this, all respondents are subjected to the same experience. For example, all persons who were present in the riot are asked particular questions relating to their common experiences in the situation. The interview is thus focused on the actual effects of the experience as viewed by the participants. Studying prisoners in the jail about the restrictions on their freedom, work, recreation, interaction, etc., is another example of focused interview. The more closely an investigation can approach the narrower conception of the focused interview, the greater the likelihood of obtaining more precise data. Other examples are: asking questions from the respondents on a particular film, particular book, particular personality, particular programme, particular policy, and so forth.

In a way, focused interview is similar to the semi-structured interview, except that it is more one and offers more freedom to the interviewer. According to Sarantakos (1998-253), this interview has some advantages: (1) the respondent gets relatively more freedom of responding to questions, (2) interviewer's role is mild; (3) information is more specific; and (4) opportunities for increased information are greater.

- **Telephonic interview**

This type of interview is common in western societies but not in India. However, gradually, it is now being used in urban areas. Newspapers, radio and TV personnel use this method more to assess public opinion on important issues, e.g., reactions on budget, opinions on election results, sudden increase in petrol or cooking gas prices, communal riots in the city, increasing crime in a town, and so on.

Some advantages of this interview are: (i) it is fast. (ii) It can be recorded on machine. (iii) It is cheap as not many investigators need to be appointed. Though the cost rises if the interviewee is located at a long distance or he is interviewed for a long period of time, yet it is much lower than the travel costs for interviewers. According to one estimate, telephone interview costs one-fourth or one-fifth of the cost of personal interviews. (iv) Respondents can be contacted at their convenient time, even in the evenings. (v) Respondent remains more anonymous than in the personal interview.

The disadvantages of this type of interview are: (1) each selected respondent in the sample may not

own the telephone (i.e., he/she may be talking on family telephone) and therefore may not feel free in an interview.

- (1) **Instructions:** The brief and fieldwork instructions will help the interviewer to avoid collecting irrelevant information what probing to be sued and how to deal with different situations and different respondents.
- (2) **Supervision:** This will detect bad work and keep interviewers up to the mark. One or two supervisors can cover the entire field of study. However, if the study is spread to a few states (say, a project sponsored on” Administrative, Economic, Political and Cultural Utility of Creating Smaller States by Bifurcating the Bigger States” in four states of Uttar Pradesh, Madhya Pradesh, Bihar, Andhra Pradesh and Maharashtra and about 500 interviews are to be conducted in each state in a period of 3-4 months, there could be one on- charge, one supervisor, and five investigators for each state. The supervision will be the main link between the field staff and head office. He may have to direct the sample selection if this is done from local lists, decide which interviewers have to participate in which area, give them their sample assignments, and check their work from item to time.
- (3) **Checking fieldwork:** Checking of fieldwork from time to time is extremely important in any research to keep the quality of the work constantly under review and find out any case where the interviewer appears to be doing unsatisfactory work. The checking work will include: (i) whether right type of persons is being interviewed or not, (ii) whether the investigator is getting the cooperation of the respondents or not, (iii) whether the investigator is properly asking the questions or not, (iv) whether the response rate is satisfactory or not, and (v) whether the data is being properly recorded or not.
- (4) **Working conditions:** Keeping the morale of the investigator’s high is very important. This could be done by providing them good working conditions, like engaging a vehicle on hire which can take different teams of investigators to their field area and bring them back in the evening, fixing their hours of work, giving them water bottles and some money for tea, arranging their say if nights are to be spent in the field area, giving them files for carrying papers, and making them payments at regular intervals.
 - **Online Interview:** Conducted via video call or text-based chat, offering synchronous or asynchronous options.
 - **Qualitative Interviews:** Focus on depth, meaning, and experience (often unstructured/semi-structured).
 - **Quantitative Interviews:** Focus on measurable data and statistics (often structured).

CHECK YOUR PROGRESS-I

1) Briefly discuss any three types of interview methods.

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13.6 MERITS/LIMITATIONS OF INTERVIEW

Interview as a tool of data collection has certain merits as well as shortcoming/ limitations. These are described as follows:

Merits

Gorden (1969:52-54) has listed five major advantages of the interview technique as under:

- (i) **Quick information:** The information is obtained quickly.
- (ii) **Proper interpretation:** Respondents interpret the questions properly.
- (iii) **Flexibility:** It permits flexibility in questioning.
- (iv) **Checking validity:** The validity of the information can be readily checked.
- (v) **Control:** Exercising control on the context of questions and answers is possible.

Besides, some more advantages are : (i) the response rate is high, (ii) in-depth probing is possible, (iii) respondent's confidence can be sought through personal rapport, (iv) interviewer can explain difficult terms and remove confusion and misunderstandings, (v) administration is easy because respondents are not required to be educated or handle long questionnaires, (vi) interviewer gets opportunity to observe respondents' non-verbal behaviour, (vii) identify of the respondent is known, and (viii) since all questions asked by the interviewers are answered by the respondents,

completeness of the interview is guaranteed.

Limitations

Following are the limitations of the interview technique:

1. The interviews can hide information or given wrong information because of fear of identity.
2. Interviews are more costly and time-consuming than questionnaires.
3. The nature and extent of responses depend upon interviewee's mood. If he is tired, he will be distracted. If he is in hurry, he will try to dispose of the interviewer quickly.
4. There could be variability in responses with different interviewers, particularly when interview is unstructured.

13.7 LET US SUM UP

Thus, to conclude interview is a conversation with purpose. There are basically two different functions of interview i.e. description and exploration and there are several types of interview method used for data collection.

13.8 GLOSSARY

1. **Interview:** The interview method is a data collection technique where a researcher engages in direct conversation with individuals to gather information about their thoughts, experiences, and behaviors.
2. **Structured interviews:** It follow a predetermined set of questions in a specific order.
3. **Unstructured interviews:** These are more flexible, allowing for open-ended conversation and exploration of emerging themes.
4. **Semi-structured interviews:** It combine elements of both, with a general framework but allowing for deviations and follow-up questions.

13.9 SELF ASSESSMENT QUESTIONS

- Q1. Discuss various functions of interview.

Q2. Given in brief various advantages of interview methods.

Q3. Discuss briefly any two types of interview methods.

13.10 LESSON END EXERCISE

- **MULTIPLE CHOICE QUESTIONS**

1. Which of the following is a characteristic of an unstructured interview?

- a) A rigid, pre-determined set of questions
- b) A conversation with the goal of gathering research information
- c) A focus on numerical data collection and analysis
- d) A short duration, typically with yes/no answers

2. In a structured interview, what is the most important rule for the interviewer?

- a) To deviate from the questions to explore interesting points
- b) To ask the questions in the exact order and wording as written

- c) To answer the participant's questions about the research
- d) To make the interview as long as possible

3. Which type of interview is also known as an in-depth interview and is characterized by a flexible conversation with a single respondent?

- a) Structured interview
- b) Semi-structured interview
- c) Unstructured interview
- d) Group interview

4. What is the primary purpose of an interview guide?

- a) To provide a list of closed-ended questions for a survey
- b) To ensure consistency by outlining the topics and questions for discussion
- c) To transcribe the interview in real-time
- d) To analyze the qualitative data after the interview is completed

5. What ethical principle is crucial before conducting any interview in research?

- a) Ensuring the participant can identify other participants
- b) Obtaining informed consent about the study's purpose, procedures, and risks
- c) Promising the participant a reward for their participation
- d) Keeping the participant's data anonymous and not confidential

13.11 ANSWER KEY (LESSON END EXERCISE)

Answer: 1- b, 2- b, 3- c, 4- b, 5- b

13.12 SUGGESTED READINGS

- Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
- Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.
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SCALING

STRUCTURE

- 14.0 Learning Objectives**
- 14.1 Introduction**
- 14.2 Meaning of Scale**
- 14.3 Reasons for using scale**
- 14.4 Types of scales**
- 14.5 Let us sum up**
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- 14.8 Lesson End Exercise**
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14.0 LEARNING OBJECTIVES

Dear learners, after studying this lesson you will be able to:

- know the different types of scaling methods.
- examine the various reasons for using scale
- understand the meaning of scale in research methodology

14.1 INTRODUCTION

Scales are techniques employed by social scientists in the area of attitude measurement. They consist of a number of statements or questions and a set of response categories, related to a score. They place respondents in a continuum between very low (or negative), over a neutral, to a very high (or positive position. Each item is chosen so that persons with different points of view on this item react to it in a different way. In this sense they are a part of surveys and questionnaires and are considered during the process of questionnaire construction.

14.2 MEANING OF SCALE

Scaling involves a high degree of operationalization and allows researchers to measure complex issues. Furthermore, it enables researchers to summate values of several variables into one score and this with a relatively high degree of reliability. In general, it offers respondents a choice of picking their answers out of given sets of alternatives, which as we shall see, are established in a very careful but also a cumbersome way.

There is nominal, ordinal and interval/ratio scales. Of these, nominal scales are not very common. Most popular are the Likert scales, the Thurstone scales and the Guttman scales, which do not use nominal measurement.

Scales vary not only in their level of measurement but also in their aims and their method of construction. Some are constructed by means of a very complicated process, while others are built in a relatively simple manner. In all cases, however, there are some basic points the experts such as Edwards (1957) and Likert (1932) some time ago said should be considered during scale construction—points that are still respected and practiced in social research today many investigators. The following are some examples:

- Language must be simple, clear and direct.
- Items must be brief (up to 20 words) and contain one issue only.
- Complex sentences must be avoided.
- Items referring to past events and factual items must be avoided.
- Ambiguous and irrelevant items must be avoided.
-
- Items that may be accepted or rejected by all respondents must be avoided.

- Words such as all, always, no one, never, only, exactly, almost should be avoided.
- Use of professional jargon and double negations should be avoided.
- Response categories must be mutually exclusive, exhaustive and one-dimensional (i.e. measuring one single construct).

14.3 REASONS FOR USING SCALES

Scales are used for a number of reasons. Apart from general methodological motives, the following reasons are most common:

- **High coverage:** Scales help to cover all significant aspects of the concept
- **High precision and reliability.** Scales allow a high degree of precision and reliability.
- **High comparability.** The use of scales permits comparisons between sets of data.
- **Simplicity.** Scales help to simplify collection and analysis of the data.

Scales are a most useful tool of social research and also one that is very difficult to construct. Construction and statistical testing are very involving and time-consuming tasks and therefore not easily accessible to the ordinary researcher. However, researchers developed and tested in the past a very large number of scales which have been adequately tested and are available to other researchers to use. In this sense, scale construction is less common than scale use. Scale construction may be a step to consider after having completed your current course of study. In the meaning using already available scales may be the way to go when addressing issues for which scales are available.

14.4 TYPES OF SCALES

1.THE THURSTONE SCALE

This scale was developed in the USA in the 1920s; it consists of a list of items constructed with the aid of experts who are very closely related to the construction of the scale. It is employed mainly in the area of attitude measurement, and is developed through a cumbersome and demanding process, as explained below.

Construction

The construction of the scale is as follows:

Step 1

The researcher selects a number of relevant statements containing a set of response categories ('agree', 'disagree') allowing respondents to express their attitudes to the issue in question

freely.

Step 2

These statements are given to a number of judges, who are asked to order them on a continuum from 1 to 11, according to the way they judge the statements. If in the opinion of the judge the statement describes the most favourable attitudes to the study object, it is given the score 1; if it describes slightly less favourable attitudes, it is given the score 2 and so on. In this way, statements are allocated a scale value.

Step 3

The statements are scrutinized in terms of the value they received from the judges. Statements that were ordered by the judges uniformly are retained and given an average scale value (the closest to the average); those that received a diverse value are discarded.

Step 4

The remaining statements are processed further by the researcher, and their number, reduced. The resulting scale is constructed so that statements are distributed evenly between 1 and 11 and each statement is identified through its scale value.

Evaluation

Although Thurston scales are still used, they are criticized among other things, for their demanding and time-consuming manner of construction, and the emphasis they place on the views of the judges. They are a valuable tool of methodology, and are employed as the sole technique or together with other methods of attitude measurement.

2.THE LIKERT SCALE

Description

Developed by Likert in 1932, this scale operates in a way similar to that of the Thurston scale. It consists of a set of items of equal value and a set of response categories constructed around a continuum of agreement/disagreement to which subjects are asked to respond. It is very popular among social scientists, is relatively easy to construct and is believed to be more reliable than the Thurston scale.

Construction

Likert scales are constructed in the following way:

Step 1

A number of items related to an issue are collected. In general, 80 to 120 items are thought to be sufficient, but four times as many items as needed are generally considered.

Step 2

Five-answer response categories are assigned to each item, ranging from 'strongly agree' through 'agree', 'undecided' and 'disagree' to 'strongly disagree' including numerical values, for example from 1 to 5 respectively.

Step 3

Statements are administered to respondents in a pilot study, and total scores are computed and further processed to determine, for instance, uni-dimensionality, that is measuring one and the same concept (usually through factor analysis), and internal consistency (e.g. correlation with the total score is calculated).

Step 4

Items with a substantial correlation are retained; items with low correlation are discarded. The constructed scale is then administered to all respondents.

Example. There is a lot of sexism going on in this community.

Strongly agree	Agree	Undecided	Disagree	Strongly disagree
1	2	3	4	5

Evaluation

Likert scales are very popular among social scientists and have been so for more than half a century. The reason for this is that they: (1) have a high degree of validity even if the scale contains only a few items; (2) provide single scores from a set of items; (3) have a very high reliability (between 0.85 and 0.94); (4) allow ranking of the respondents; and (5) are relatively easy to construct. Nevertheless, researchers point to some drawbacks of this method. For example, total scores referring to many and diverse items say little about a person's response to the various aspects of the research object; also, it is difficult to achieve equal items in the scale (Kimmon, 1990).

3.THE BOGARDUS SOCIAL DISTANCE SCALE

Description

This scale was developed in the USA and was employed to measure ‘social distance’ between the respondents and persons of other nationalities or races: it is still used to determine how close a respondent is willing to place himself or herself to persons of other races or nationalities.

The scale consists of a number of statements that indicate the degree of distance between the respondent and the groups under study. More particularly the respondents are asked to state their reactions to a set of statements varying in intensity of closeness to a population group. As a concrete example, respondents could be asked to state which of the following seven statements (which actually make up the scale) reflect accurately and honestly their true feelings towards Aborigines, and whether they would accept an Aborigine as a:

- close relative by marriage
- personal friend
- neighbor
- colleague at work
- speaking acquaintance only
- visitor to their country
- person to be kept out of their country

Interpretation

The results obtained through this procedure are evaluated as shown below:

- Compute the mean values for each group.
- Rank each group according to the value of the mean.
- The higher the value, the greater the social distance, that is the lower the willingness to assume contacts with that group; and the stronger the negative prejudice and attitude to that group.

Application

This scale, although originally developed to measure distance among ethnic groups, can be equally successfully employed in other areas, for example in market research and studies of race relations. One could, for instance, develop a range of questions related to a certain item (car, television set, record player, etc.) that could best describe a person’s intention and willingness to buy this item.

For example, questions ranging from 'I would most certainly buy this product' to 'I will never buy such a thing my life' can be used to measure the degree of a person's readiness to purchase the item.

Evaluation

This scale has been used very extensively by social scientists. The three most common advantages of the scale are the following:

1. A very high split-half reliability (r is equal to or greater than 0.90).
2. A high content validity of the scale items.
3. A satisfactory overall validity and reliability.

Although there are some problems associated with the construction of the steps of the scale and their order, the scale is considered to be a very useful tool of social research.

4. THE GUTTMAN SCALE

This is another scale that measures social distance, or rather proximity'. It consists of a number of statements placed in a hierarchical order ranging from low to high in such a way that if respondents reject one statement, they will also reject all other statements above it; and if they accept one statement they will accept all other statements below it.

Respondents are normally asked to state whether they agree or disagree with each of the statements. The results obtained are expected to show the degree of proximity or distance of the subjects from the research object (e.g. migrants, blacks, homosexuals etc.). More particularly, it will show how far the respondents will allow certain people to come close to them.

Construction

Construction of such a scale is complicated and time consuming. In a simplified form it can be constructed in the following way:

Step 1

A number of statements thought to be cumulative, that is, they fall in a hierarchical order ranging from low to high, are formulated in such a way that if respondents reject one statement, they will also reject all other statements above it; and if they accept one statement, they will accept all other statements below it.

Step 2

These statements are presented to a number of subjects (say, 10), who are asked to state whether they agree or disagree with each statement.

Step 3

A table with the numbers of the statements on the top, and the side, is constructed; the agreements of the subjects with each statement are entered (note that disagreement is not recorded).

Step 4

The statements are then ordered so that the one accepted by one subject only is placed first, the statement accepted by two subjects second, the statement accepted by three subjects third and so on.

Step 5

The reproducibility value, which is I minus the fraction consisting of the number of errors (numerator) and the number of responses (denominator), is computed. If the score is 0.90 or better the scale is satisfactory.

Evaluation

This scale has been employed very extensively in the past and is still considered to be valid and useful way of measuring social proximity. But it is considered to be more cumbersome than the Bogardus social distance scale, which is used more frequently.

5.THE SEMANTIC DIFFERENTIAL SCALE

Description

This technique was developed by Osgood, Suci and Tannenbaum in 1957 and has been used by social scientists to measure the impression concepts make on people and the meaning they invoke. Concepts are measured independently as well as in comparison with other concepts, and can be related to a variety of contexts, issues or objects, in this way allowing the researcher to draw relevant conclusions about the respondents.

The semantic differential scale consists of a number of opposite concepts, which may range from 7

to over 70. Examples of such opposites are given below. The data sheet containing the sets of opposites is administered to the respondents with instructions to place an individual (e.g. a teacher) or a group of individuals (e.g. Asian migrants) in a specific position between the extremes of a continuum.

Example: SOME OPPOSITES

Good	6	5	4	3	2	1	0	Bad
Democratic	6	5	4	3	2	1	0	Authoritarian
Sociable	6	5	4	3	2	1	0	Unsociable
Strong	6	5	4	3	2	1	0	Weak
Flexible	6	5	4	3	2	1	0	Rigid
Cooperative	6	5	4	3	2	1	0	Uncooperative
High	6	5	4	3	2	1	0	Low
Hard	6	5	4	3	2	1	0	Soft
Conformist	6	5	4	3	2	1	0	Non-conformist
Fair	6	5	4	3	2	1	0	Unfair
Difficult	6	5	4	3	2	1	0	Easy
Active	6	5	4	3	2	1	0	Passive
Sharp	6	5	4	3	2	1	0	Dull
Independent	6	5	4	3	2	1	0	Dependent
Irritable	6	5	4	3	2	1	0	Calm
Hot	6	5	4	3	2	1	0	Cold
Harmonious	6	5	4	3	2	1	0	Unharmonious

The numbers indicate the degree of agreement or disagreement of the subjects regarding the concepts under evaluation. In the example, 6 stands for very good, strong, high, etc., 5 for moderately good, strong, etc., 4 for fairly good, strong, etc., 3 for undecided, 2 for fairly bad, unsociable, weak low, etc., 1 for moderately bad, unsociable, weak, etc., and 0 for very bad, unsociable weak, low, etc.

The subject's judgment is based on three distinct characteristics, namely evaluation of the individual, judgment of the potency or power of the individual, and judgment of the activity of the individual. General evaluation is judged by opposite

such as good-bad, sociable-unsociable, high-low and harmonious-unharmonious. Potency is judged by means of opposites such as hard-soft, large-small, difficult-easy and unyielding-lenient. Activity is judged by opposites such as hot-cold, active-passive, sharp-dull and irritable-calm. Of these three dimensions the first (evaluation) seems to be the most important.

Respondents are advised to evaluate the study person or group, by indicating the number that corresponds to their feelings on the specific item. If the respondents think that the person in question is moderately good, they are advised to circle '5' at the 'good' and 'bad' item; if they feel that this person is fairly unsociable, they should circle '2' in the second line, and so forth. Each circle represents a score which can be high or low depending on the subject's judgment of the concept or the individual, for example the teacher. When the evaluation is completed, a total score for the impression of the concept or the person in question is computed by adding up all individual scores. A high score represents a high impression and a low score indicates a low impression of the concept or the person.

This scale can be employed successively in a number of different groups, such as Asian migrants, Italian migrants and British migrants, allowing comparisons to be made between these groups.

Interpretation

The results of this procedure can be interpreted and presented in many ways. The method of adding up the individual scores mentioned above is one. Drawing profiles, computation of correlation coefficients and of the semantic distances are other ways.

Evaluation

The semantic differential method offers precise information about the attitudes of people toward others. It allows evaluation of concepts, comparisons and measurement of different types on the same measure, and is relatively easy to construct. It has, however, to be treated with caution. For instance, a long list of points to choose from might cause confusion and also inaccurate results. The use of equal intervals or ordinal data is another issue. Definitions of the concepts and their meanings might vary from one respondent to another, causing problems and distortions.

CHECK YOUR PROGRESS

1) The main difference between interval scale and the ratio scale in terms of their properties is:

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2) Why should the researcher know the level of measurement.

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3) What are the main statistical limitations of nominal scale.

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14.5 LET US SUM UP

The concept and practice of measurement are two important and also controversial issues. However, the controversy in this case is not about whether to employ measurement in social research or not but rather about how and in what way measurement should be employed. The practice of measurement is well accepted in social research, regardless of type and nature. Some studies may use nominal measurement; others may use ordinal and others interval/ratio measurement.

All types of measurement are employed. The notion that one type of research is better than the other is incorrect. Qualitative researchers may opt for nominal measurement, but this does not make other types of measurement less effective. In one and the same research instrument one may find some variables being measured at the nominal level and others at the ordinal or

interval/ratio level. The latter provides different types of information than the former but it nevertheless produces equally useful information.

The level of measurement is useful for itself, but more so for further research and analysis. The level of measurement determines the type of measures that are too employed in the analysis. As we see before there is a close relationship between level of measurement, type of variable and statistical tests. For this reason, having a clear understanding of the level of measurement is important for doing research, and for assuring high level of accuracy.

Measurement together with objectivity and ethics on one hand and with validity and reliability on the other constitute major principles of social research. The latter are central to any type of research, regardless of its nature and ideological affiliation. Adherence to reliability and validity is a fundamental requirement which researchers have to consider seriously when doing research. Reliability and validity are indicators of consistency, truthfulness and accuracy, and such concepts are structural ingredients of any type of research.

14.6 GLOSSARY

1. **Scaling:** In research, scaling refers to the process of assigning numbers or symbols to objects or characteristics according to a set of rules.
2. **Comparative scales:** Require respondents to compare one object or concept to another (e.g., paired comparison, rank order, constant sum).
3. **Non-comparative scales:** Allow respondents to evaluate items independently (e.g., Likert scale, continuous rating scales).

14.7 SELF ASSESSMENT QUESTIONS

Q1. Discuss different types of scales used for data collection.

Q2. Elaborate different reasons for using scale.

Q3. What is meant by the term scaling.

14.8 LESSON END EXERCISE

- **MULTIPLE CHOICE QUESTIONS**

1. Which of the following is not a level of measurement?

- A) Nominal scale B) Ordinal scale C) Internal scale D) Ratio scale

2. Nominal scale is also known as.....?

- A) Rational variable B) Categorical variable
C) Predictor variable D) Extraneous variable

3. Scale is used for labelling variables into distinct classifications?

- A) Nominal B) Ordinal C) Ratio D) Interval

4. One of the characteristics of is that equal distinct between objects or variable?

- A) Ratio scale B) Nominal scale C) Ordinal scale D) Interval scale

5. The researchers need to understand techniques of developing a measurement tools.

It includes?

- a) Concept development and specifications of concept dimensions
- b) Generalisation of facts and data
- c) Selection of indicators and formation of index
- d) Interpretation of circumstantial evidences

Code

- A) a only** **B) a and c only**
- C) a, b and c** **D) c and d only**

6. is a numerical scale, where the order of the variable is known as well as the difference between these variables

- A) Interval scale B) Ratio scale C) Ordinal sale D) Nominal scale

14.9 ANSWER KEY (LESSON END EXERCISE)

Answer: 1-c, 2-b, 3-a, 4-d, 5-b, 6-a

14.10 SUGGESTED READINGS

- Babbie, Earl, The Practice of Social Research (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, Methods and Issues in Social Research, John Wiley, New York, 1976.
- Manheim, Henry, Sociological Research: Philosophy and Methods, The Dorsey Press, Illinois, 1977.

OBSERVATION

STRUCTURE

- 15.0 Learning Objectives
- 15.1 Introduction
- 15.2 Meaning and Definitions
- 15.3 Types of Observation Method
- 15.4 Steps in Observation Process
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15.0 LEARNING OBJECTIVES

Dear learners, after going through this lesson you will be able to understand:

- The meaning and definitions of the Observation Method.

● Types of Observation Methods and its Purpose

15.1 INTRODUCTION

Observation is one of the oldest methods of data collection. Until it was introduced to sociology it was largely employed by social anthropologists and ethnologists, with sociologists and other social scientists opting in larger number for survey and other such techniques. Nevertheless, with time Observation gradually became popular outside anthropology and ethnology and particularly in social sciences.

Today Observation is proclaimed to be one of the fundamental techniques of Social Research.

Literally, Observation means a method of data collection that employs vision as its main means of data collection. It is used as the technique of data collection jointly with other techniques, for instance in intensive interviewing, documentary studies or case studies. Observation is an indirect method of data collection since in most cases it collects information without the full knowledge of the respondent. Often, even if the respondent knows that he or she is being observed, the actual purpose and nature of observation are not known.

15.2 MEANING AND DEFINITIONS

Lindzey Gardner defined observation as, “selection, provocation, recording and encoding of that set of behaviours and settings concerning organisms “in situation” which are consistent with empirical aims”. In this definition, selection means that there is a focus in observation and also on editing before, during and after the observations are made. Provocation means that though observers do not destroy natural setting but they can make subtle changes in the natural settings which increase clarity. Recording means that the observed incidents/events are recorded for subsequent analysis.

To Zikmund six kinds of contents can be observed in observation:

1. Physical action, e.g., pattern of working, watching television.
2. Verbal behaviour, e.g., conversations between husband-wife, student-teacher etc.
3. Expressive behaviour, e.g., tone of voice, facial expression, body language.
4. Spatial relations, e.g., physical distance between workers in a factory.
5. Temporal pattern, e.g., amount of time spent in performing ritualism.
6. Verbal records, e.g., contents of memoranda, slogans shouted, speeches etc.

Thus feelings, attitudes, motivations, expectations, interactions and preferences can't be observed.

15.3 TYPES OF OBSERVATION

Observation method differs from one another along several variables or dimensions. Various types of observations are shown as below: –

1. **Naive and Scientific Observation:** Naive Observation refers to everyday, Unstructured Observation which people use when they interact with others in social situations. Observation becomes scientific when it is systematically planned and executed, when it is related to a certain goal and when it is subjected to tests and controls.
2. **Natural Observations and Laboratory Observations:** The main difference between these two techniques lies in the type of setting in which they unfold. In the former, observations take place in natural settings, in the latter they are performed in a laboratory.
3. **Open and hidden observation:** This distinction refers to the degree to which the identity of the researcher as an observer as well as the purpose of the study is known to the participants. While in the case of open observation the participants are well informed of the study and the identity of the researcher, in hidden observation they are not.
4. **Active and Passive Observation:** This type of observation refers to the degree to which the observer is involved in the process and purpose of observation. Active observation presupposes full engagement of the observer in the study, while passive observation sees the role of the observer as being just a strict recording of data. In this case, observation is a job to be done in an objective and neutral fashion.
5. **Direct and indirect observation:** Direct Observation studies the subject it intends to explain e.g., if the study intends to explain the pattern of conflict in marital relations and observation involved married couples, this is a direct observation. Indirect observation does not involve the object of study, either because the subject refuses to take part in the study or a direct observation is not possible. Instead, researchers observe the physical traces the phenomena under study have left behind to make conclusions about the subject.
6. **Structured and Unstructured observations:** Structured observation employs a formal and strictly organised procedure, with a set of well-defined observation categories, and is subjected to high levels of control and differentiation. It is organised and planned before the study begins. Unstructured observation is loosely organised and the process of observation is largely left up to the observer to define.

7. **Participant and non-participant observation:** In general, the degree of the observer's involvement in observation varies from 'no participant' to 'full participation'. In the first case, observers study their subject from outside the group without becoming a part of the environment of the observed; in the second case, they actually become the member of the group they are supposed to study. The first type of observation is known as non-participant observation; the other is participant observation.

In participant observation, a social research worker becomes as much as possible a member of the group which he is studying and participates fully in the life of the group. Bronislaw Malinowski, a distinguished social anthropologist made use of this method by staying with the people of Trobriand Island for 3-4 years and observing their social and cultural life. In this method, the observers observe from inside the group and ideally their identity as a researcher is not known. For instance, researcher who wants to observe criminals in action manages to become member of criminal gang.

In the case of non-participant observation, the observers are not a part of the environment they study. Their position is clearly defined and different from that of the subjects. In ideal term the observers are invisible, unnoticed and outside the group they observe. The best example of non-participant observation is laboratory observation.

CHECK YOUR PROGRESS

Q1) Differentiate between structured and unstructured observation.

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Q2) Discuss the purpose of observation method in detail.

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Q3) Write any three advantages of observation method.

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• **Characteristics of Observation**

Scientific observation differs from other methods of data collection specifically in four ways: –

- (i) Observation is always direct while other methods could be direct or indirect.
- (ii) Field observation takes place in a natural setting.

- (iii) Observations tend to be less structured.
- (iv) Observation makes only the qualitative study which aims at discovering subjects' experiences and how subjects make sense of them (phenomenology) (Interpretive understanding).

15.4 STEPS IN OBSERVATION

Observation takes place in the same form as the general research model introduced earlier in this book. Nevertheless, the content of each step includes elements that are more or less influenced by the nature of observation. The following is the brief summary of the basic steps of research as employed in the area of observation mainly by quantitative researchers. Qualitative investigations may use the same steps but their content will have to be adjusted to the principle of the underlying theoretical framework.

1. **Selection of the Topic:** This step entails the selection of a theoretical approach and the issue to be studied through observation. This must be an observable social phenomenon at any level.
2. **Formulation of the Topic:** This involves a specific definition of the topic; explanation of its elements and structure; development of observation categories; establishment of the observer-subject relationship, and explanation of what is to be observed where required.
3. **Research design:** Here, the researcher will determine the subjects to be observed; select the setting for observation; and make arrangements for entry into the setting for recording the data and printing the documents.
4. **Collection of data:** This involves familiarization with the setting and subjects, initial interaction; observation and recording.
5. **Analysis of data:** At this stage the researcher will undertake data reduction, presentation, cross tabulation and interpretation.
6. **Report writing:** This involves the writing of the report to be published in some form.

15.5 PURPOSE OF OBSERVATION

The main purposes of observation as described by Black and Champion are as under: –

1. To capture human conduct as it actually happens. In other methods, we get a static comprehension of people's activity. In actual situation, they sometimes modify their views, sometimes contradict themselves, and sometimes are so swayed away by the situation, that they react differently altogether e.g., clerk's behaviour in offices, tone of voice, facial expressions of

content of slogans by the demonstrators.

2. To provide more graphic description of social life than can be acquired in other ways. e.g., how do women behave when they are physically assaulted by their husbands?
3. To explore important events and situations. There are many instances when little is known about the topic/issue. By being on the scene, issues that might otherwise be overlooked are examined more carefully; e.g., visiting office soon after the office hours and finding that the married men and single women were working overtime and single men and married women had gone home.
4. It can be used as a tool of collecting information in situation where methods other than observation cannot prove to be useful, e.g., worker's behaviour during strike.

15.6 ADVANTAGES OF OBSERVATION

Bailey has pointed out four advantages of observation.

1. **Superior in data collection on non-verbal behaviour:** - When a person's opinion on a particular issue is to be assessed, survey method is definitely more useful, but when the non-verbal behaviour is to be discovered or where memory failure of the respondent is possible, observation will be more functional. It allows not the restrictive study of the individuals but their in-depth study.
2. **Intimate and Informal relationship:** Since, the observer often lives with the subjects for an extended period of time, the relationship between them is often more intimate and more informal than in a survey in which the interviewer meets the respondents for 30-40 minutes on a very formal basis. The relationship sometimes becomes primary than secondary.
3. **Natural environment:** The behaviour being observed in natural environment will not cause any bias. Observation will neither be artificial nor restrictive.
4. **Longitudinal analysis:** In observation the researcher is able to conduct his study over a much longer period than in the survey.
5. **Validity of data:** Since the researcher collects firsthand information from the field, the information is valid and correct. She/he is not forced to rely on others and therefore saved from getting wrong, partial or misinterpreted information.

15.7 LIMITATIONS OF OBSERVATION

According to Bailey, limitations of observation method are: –

1. **Lack of control:** In artificial setting, control over variables is possible but in natural environment, the researcher has little control over variables that affect the data.
2. **Difficulties of quantification:** The data collected through observation is difficult to quantify. The recorded data will show how persons interacted with one another but it cannot be comprehended the number of times they interacted. In communal riots, looting, arson, killing etc. may be observed but it cannot be quantified what type of people indulged in what act of violence? It is difficult to categories in-depth emotional and humanistic data.
3. **Small sample size:** Observational studies use a smaller sample than survey studies. Two or more observers can study a bigger sample but then their observations cannot be compared. Since observations are made for a longer period, employing many observers can become a costly affair.
4. **Gaining entry:** Many times, the observer has difficulty in receiving approval for the study. It is not easy to observe the functioning of an organisation or institution without obtaining permission from the administrators. In such cases, he may not record observations when required and necessary.
5. **Lack of anonymity/studying sensitive issue:** In observational study, it is difficult to maintain the respondent's anonymity. In survey, it is easy for the husband to say that he has no quarrels and conflicts with his wife but in observation over a longer period of time, he cannot conceal them.

15.8 LET US SUM UP

So, it can be said that observation is a method that employ vision as its main means of data collection. It implies the use of eyes rather than of ears and the voice. It is accurate watching and noting of phenomena as they occur with regard to the cause and effect. It is watching other person's behaviour as it actually happens without controlling it. Example, watching bonded labourer's life or treatment of widows and their drudgery at home provides graphic description of their social life of suffering. Observation is also defined as a "planned methodical watching that involves constraints to improve accuracy".

15.9 GLOSSARY

1. **Observation:** In research, observation refers to a data collection method where researchers systematically watch and record the behaviour, characteristics, or events of participants in their natural or controlled settings.

2. **Systematic and Organized:** Observation in research is not casual watching. It involves a planned approach with clear objectives, defined what will be observed, and how the data will be recorded.
3. **Natural or Controlled Settings:** Observations can occur in the real-world environment where the phenomenon naturally occurs (e.g., a classroom, a store, a park) or in a controlled setting like a laboratory.
4. **Overt or Covert:** Researchers can choose to observe openly, with participants aware of being watched, or covertly, where participants are unaware of being observed.
5. **Direct Evidence:** Observation provides firsthand data on what people do, allowing researchers to understand behaviors and interactions in a way that may not be captured through other methods like interviews.

15.11 SELF ASSESSMENT QUESTIONS

Q1. What is the purpose of using observation method.

Q2. Discuss various steps used in observation.

Q3. Give a detail account of the advantages of using observation.

15.12 LESSON END EXERCISE

• MULTIPLE CHOICE QUESTIONS

1. In which type of observation does participants not know they are being observed?

- a) Participant observation
- b) Covert observation
- c) Overt observation
- d) Naturalistic observation

2. What is the main difference between scientific observation and day-to-day observation?

- a) Scientific observation is less systematic
- b) Scientific observation involves careful selection, recording, and analysis of data
- c) Day-to-day observation is more purposeful
- d) Scientific observation lacks a definite purpose

3. A study where an observer makes no effort to control or manipulate the situation is an example of:

- a) Controlled observation
- b) Participant observation
- c) Naturalistic observation
- d) Covert observation

4. Which of the following is a key characteristic of scientific observation?

- a) It is casual and unplanned
- b) It is used for everyday curiosity
- c) It involves observing people's behaviors and attitudes naturally
- d) It is not concerned with the accuracy of data

5. When observation is done in a natural or real-life setting, it is called:

- a) Controlled observation
- b) Structured observation

- c) Naturalistic observation
- d) Subjective observation

6. Ethical considerations are particularly important in which type of observation?

- a) Participant observation
- b) Naturalistic observation
- c) Covert observation
- d) Structured observation

7. The observation method is considered a powerful tool for data collection because:

- a) It only provides quantitative data
- b) It allows the researcher to gather insights naturally
- c) It is a substitute for all other research methods
- d) It always involves a high degree of researcher control

15.13 ANSWER KEY (LESSON END EXERCISE)

Answers:

- 1. b) Covert observation**
- 2. b) Scientific observation involves careful selection, recording, and analysis of data**
- 3. c) Naturalistic observation**
- 4. c) It involves observing people's behaviors and attitudes naturally**
- 5. c) Naturalistic observation**
- 6. c) Covert observation**
- 7. b) It allows the researcher to gather insights naturally**

15.14 SUGGESTED READINGS

- Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
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CASE STUDY METHOD

STRUCTURE

- 16.0 Learning Objectives**
- 16.1 Introduction**
- 16.2 Meaning and Definitions**
- 16.3 Characteristics of Case Study**
- 16.4 Methods**
- 16.5 Assumptions**
- 16.6 Planning**
- 16.7 Sources of Data Collection**
- 16.8 Importance of Case Study**
- 16.9 Criticism**
- 16.10 Let us sum up**
- 16.11 Glossary**
- 16.12 Self-Assessment Questions**
- 16.13 Lesson End Exercise**
- 16.14 Answers to check your progress**
- 16.15 Suggested Readings**

16.0 LEARNING OBJECTIVES

Dear learners, after going through this lesson you will be able to Understand:

- **Meaning and definitions of the Case Study**
- **Characteristics of the Case Study**
- **Method used for Case Study**
- **Assumptions in Case Study**
- **Sources of data collection for Case Study**

16.1 INTRODUCTION

Case Study is not a method of data collection; rather it is a research strategy, or an empirical inquiry that investigates contemporary phenomenon by using multiple sources of evidence. Yin and Hammersley both have supported this view, as far as the definition of Case Study is concerned. Mitchell has also maintained that a Case Study is not just a narrative account of an event or a series of events but is involves analysis against an appropriate theoretical framework or in support of theoretical conclusions. Case Study can be simple and specific such as “Ram, the delinquent boy”, or complex and abstract, such as “decision making in a university”. But whatever the subject, to qualify as a Case Study, it must be a bounded system/unit, an entity in itself.

16.2 MEANING AND DEFINITIONS

Case Study is an intensive study of a Case which may be an individual, an institution, a system, a community, an organization, an event or even the entire culture. Some definitions of the Case Study are: -

1. **According to Yin**, “An empirical enquiry that investigates a contemporary phenomenon within its real-life context, when the boundaries between the phenomenon and the context are not clearly evident and in which multiple sources of evidences are used”.
2. **According to Kromsay**, “It involves studying individual cases, often in their natural environment and for a long period of time”. It is thus a kind of research design which usually involves the qualitative method of selecting the sources of data. It presents the holistic account that offers insight into the case under study. When attention is focused on the development of the case, it is called “Case history”.

16.3 CHARACTERISTICS

Some of the characteristics of the Case Study are: –

1. **The study of the whole unit:** In this study, a large variety of units are selected for study and the size of the unit may be quite large to cover an entire community. In a word, this method treats an individual, an institution or a group of persons as a whole.
2. **Intensive Study:** It aims at deep and thorough study of a unit. It deals with every aspect of a unit and studies it intensively.

16.4 METHODS IN CASE-STUDY

1. **Determination of factors:** First of all, the collection of materials about each of the units or aspects is very essential. The determination of factors may be of two types i.e., particular factor and general factor.
2. **Statement of the problem:** In this process, the defined problem is studied intensively and the data are classified into various classes.
3. **Analysis and Conclusion:** After classifying and studying the factors, an analysis is made, which in turn helps to draw conclusions.

16.5 ASSUMPTIONS OF CASE-STUDY METHOD

- (a) **Totality of Being:** In this method, the unit is studied as a whole.
- (b) **Complexity of Social phenomena:** Since the social problem is complex, a deeper study is required.
- (c) **Underlying unity:** It is generally seen that a unit may be representative of a group and can be studied as a type rather than as an individual. This characteristic of underlying unity helps the researcher to apply the inferences or conclusions from a single unit to the unit as a whole or to other units.
- (d) **Time Factor:** The time factor has its impact on social phenomena. So, a historical perspective of the problem is required for the study of the problem.

CHECK YOUR PROGRESS-I

A) State whether the statement True or False

- 1) Case study involves in-depth study ()
- 2) Case study provides a systematic and scientific ways of perceive ()
- 3) Case study can be used only in clinical psychology ()
- 4) The approach of case study is based on the artificial atmosphere ()
- 5) Critical case studies are useful for cause-and-effect questions ()

B) Fill in the blanks

- 1) Case study means single and _____ case studies.
- 2) Case studies based on any evidence of quantitative andresearch.
- 3) case study performed before implementing a large-scale investigation.
- 4)..... is the last step of case study.

• Purpose of Case Study

Burns has pointed out the following purposes of a Case Study: –

1. To use it as a preliminary to major investigation as it may bring to light variables, processes and relationships that deserve more intensive investigation. In this sense, it may even be a source of hypothesis for future research.
2. To probe the phenomenon deeply and analyze it intensively with a view to establishing generalizations about the wider population to which the unit belongs.
3. To get anecdotal or true evidence that illustrates more general findings.
4. To refute a universal generalization. A single case can represent a significant contribution to theory building and assist in focusing the direction of future investigation in the area.

5. To use it as a unique, typical and an interesting Case in its own right.

16.6 PLANNING THE CASE STUDY

The research design of a Case-Study involves four components: –

1. **Designing initial questions:** These pertain to questions of who, what, where, when and how? For example, the Case Study of a drug addict focuses on questions like what types of drugs are taken. How often these are taken? When was initial step made in starting taking drug and so on?
2. **Study proposition:** While the initial questions are general, specific questions need to be asked for specific evidence. In the above example, the specific questions could be: in last one-week, what drugs (s) were taken by the addict, from whom did he obtain drugs, and so on.
3. **Unit of Analysis:** This is concerned with defining the actual Case, i.e., the person, the event, and the system that is to be studied. e.g., in the above example we may identify the drug addicts in a particular college/university and restrict the study to these students only. As another example, we may concentrate on the women employees of a particular organization for studying the dual role performance of adjustment of working women. This way, the researcher is bounded and will not be tempted to collect data from persons randomly selected.
4. **Linking data to propositions and criteria for interpreting findings.** This component relates to data analysis step.

16.7 SOURCES OF DATA COLLECTION FOR CASE STUDY

Two main sources of primary data collection are Interviews and Observation, while the secondary data are collected through a variety of sources like reports, records, newspapers, magazines, books etc. The secondary sources may not be accurate or may be biased. But they specify events and issues in greater details than interviews can.

Interviews may be structured or unstructured. Most commonly, it is the unstructured interview which is used by the investigators. The questions are usually open-ended with a conversational tone. However, at times, the structured interview is also used as part of a Case Study.

The observation methods used could either be participant or non-participant. The latter has been used more by sociologists in India like Srinivas, Sacchidananda etc. For some topics, like recording the annual crop cycle of the villages, observance of rituals etc. the non-participant observation is more suitable. Both these methods give opportunity to the investigator to perceive reality from the viewpoint of an outsider.

16.8 IMPORTANCE OF CASE STUDY METHOD

The case study method has occupied an important place in the field of social research. Its merits are: –

1. Intensive in nature.
2. It is flexible with respect to using methods for collecting data e.g., questionnaire, interview etc.
3. It could be used for studying any dimension of the topic, i.e., it could study one specific aspect and may not include other aspects.
4. It can be conducted in practically any kind of social setting.
5. Case studies are inexpensive.

16.9 CRITICISM

Case study method is generally criticized on the following basis: –

1. **Subjective Bias:** The case study design is regarded with disdain because of investigator's subjectivity in collecting data for supporting or refuting a particular explanation. Many a time the investigator allows personal views to influence the direction of the finding and his conclusions.
2. **False sense of Confidence:** In case study method, a researcher becomes over confident. Since he studies various aspects of the life of an individual, he thinks that he knows everything about the person. But it is seen very often that many other aspects of life were hidden about which the respondent himself was ignorant.
3. **False Generalization:** Since it is not possible to collect proper data and information through this method, the generalizations on this basis becomes defective and faulty.
4. **Difficulties in collection of Historical Data:** Through this method, proper data collection is very difficult. This is because generally the respondents do not reveal the actual facts to the researchers.
5. **Expensive in Nature:** The time and money required for this study are sometimes too much. The study becomes time consuming and requires extra expenditure.
6. **Lack of Quantitative Study:** The Case Study method is qualitative in nature. It deals with only the psychological aspects of a human being. Quantification and measurement of data therefore become difficult.
7. **Unorganised and Unsystematic:** The method is unorganised and unsystematic,

because there is no control on the researcher and on the respondent. Thus, verification is not possible. Hence, the data collected by this method is often unreliable and the generalization drawn from it is also not very inaccurate.

16.10 LET US SUM UP

In spite of the drawbacks of the Case Study method, social scientists are in great need of this method for conducting their research. Many scientists have tried to put the method on more scientific line. Among them are, Carl Rogers, Alferd Kinsey, John Dollord, and many other eminent scientists. They have suggested some ways for the improvement of the Case Study method. They are given below:

—

1. The subject of study must be regarded as a specimen in a series of similar problems.
2. The life-history material should be organised and properly conceptualized.
3. In this method, the techniques of elaboration of organic materials into social behavior must be properly specified.
4. The method of action should be socially relevant.
5. The important role of any group or institution, which is responsible for transmitting a culture, should be recognized.
6. In a Case Study relating to individuals, the continuously related experience should be stressed.
7. The social situation should be specified as a part and parcel of study.

16.11 GLOSSARY

1. **Case- study:** A case study is defined as an in-depth investigation of a single individual, group, event, or organization within its real-life context.
2. **In-depth analysis:** They aim to explore the subject's characteristics, meanings, and implications in a comprehensive manner.
3. **Real-life context:** Case studies are conducted within the natural setting of the subject, allowing for a realistic and contextualized understanding.
4. **Multiple sources of data:** Researchers often gather information from various sources like interviews, observations, documents, and artifacts.

5. Qualitative and quantitative methods: While often qualitative, case studies can also incorporate quantitative data to provide a more holistic view.

16.12 SELF ASSESSMENT QUESTIONS

Q1. Discuss different characteristics of case-study method.

Q2. Write importance of case-study method.

Q3. How you define the term case study.

16.13 LESSON END EXERCISE

1. What are the specific problems in using case-study method?

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2. What is the central phenomenon or issue that requires deeper understanding in case-study?

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3. What is the purpose of using case-study method?

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16.14 ANSWERS TO CHECK YOUR PROGRESS

Answers: A) 1-True, 2- True, 3) False, 4) False, 5) True

B) 1-Multiple, 2-Qualitative, 3-Exploratory Case Study/ Pilot Study, 4-Conclusion Drawing

16.15 SUGGESTED READINGS

- Babbie, Earl, The Practice of Social Research (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, Methods and Issues in Social Research, John Wiley, New York, 1976.
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CONTENT ANALYSIS

STRUCTURE

- 17.0 Learning Objectives**
- 17.1 Introduction**
- 17.2 Meaning and Definitions**
- 17.3 Characteristics**
- 17.4 Steps in Content Analysis**
- 17.5 Types of Content Analysis**
- 17.6 Sources of data collection for Content Analysis**
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- 17.13 Answer Key**
- 17.14 Suggested Readings**

17.0 LEARNING OBJECTIVES

Dear learner, the aim of this lesson is to familiarize you with:

- **Meaning and definitions of Content Analysis**
- **Characteristics of Content Analysis**
- **Steps of Content Analysis**
- **Types of Content Analysis**
- **Sources for Content Analysis**

17.1 INTRODUCTION

Human beings communicate through language more than through symbols because language helps in conveying emotions, knowledge, opinion, attitudes and values. Written communication has increased the importance of print media because it is through writing that people are convinced, motivated and manipulated. But besides the print media, television, radio, movies also communicate ideas, beliefs and values. The analysis of communication content—written pictorial—has now become a methodological procedure for extracting data from a wide range of communications. The content analysis method therefore needs to be assessed as a research technique for objective of systematic description of that content of communication which is manifest.

17.2 MEANING AND DEFINITIONS

Content analysis is a method of Social Research that aims at the analysis of the content quantitative or/and qualitative, of documents, books, newspapers, magazines of other forms of written material. Some important definitions of content analysis are:

1. **According to Berelson**, “Content analysis is a research technique for the objective, systematic and quantitative description of the manifest content of communication.” The word communication here refers to “available written material or print media”. The word manifests mean which is presented outwardly. It thus excludes the implied Meaning.
2. **According to Eckhardt and Erman**, “as a qualitative technique, content analysis is directed towards more subjective information such as attitudes, motives and values, while as a quantitative method, it is employed when determining the time frequency or duration of the event. In the latter content, it also makes inferences about conduct, intentions, ideologies,

sentiments and values of individuals and groups.”

The content may be manifest or latent. The former refers to the visible actual parts of the content or manifested in the documents, i.e., sentences, paragraph, and so on. It involves counting frequencies of appearances of the research unit. The latter is the underlying or implied meaning conveyed. Here the researcher reads between the lines and analyses the hidden meaning significant for the object of the study.

17.3 CHARACTERISTICS

Gardner has referred to four characteristics of content analysis as under: –

1. **Objectivity:** i.e., carrying out analysis on the basis of explicitly formulated rules which will enable two or more persons to obtain the same results from the same documents.
2. **Systematic:** i.e., including or excluding the content or categories according to consistently applied criteria of selection. This eliminates analysis in which only materials supporting the investigators hypothesis are examined.
3. **Generality:** i.e., the findings must be theoretically relevant. Purely descriptive information about content unrelated to other attributes of content or to characteristics of the sender or recipient of the communication is of little scientific value.
4. **Quantification:** i.e., the answers of the questions raised should be in quantitative terms. Some scholars equate the term quantitative with numerical i.e., classifying content in precise numerical terms. This means that inferences must be derived strictly from counts of frequency. It also means that information should be conveyed as 40 percent people or 40 out of 100 people had the opinion.

17.4 STEPS IN CONTENT ANALYSIS

According to Sarantakos, Content Analysis involves the same steps as in other methods of research namely, selection of the area of research, formulation of research topic, designing research, collecting data and analysing data. The difference in content analysis and other methods lie only in the content of each step.

1. **Selection of the research area:** The topic can be one whose various aspects are discussed by the newspapers, magazines, books, T.V. Serials, motives of the like e.g., communal violence, match fixing, caste conflicts and so on.
2. **Formulation of Research Topic:** It involves explaining and operationalising the topic,

selection of units, determining categories of formulating hypotheses.

3. **Research Design:** It aims at determining the size of sampling, method of collecting data and methods of checking reliability.
4. **Data Collection:** It involves counting frequencies gathering information on the intensity of the units, determining significance of units and evaluating units and intensity of the statements.
5. **Analysis of interpretation of data:** It aims at giving inferences of conclusions.

CHECK YOUR PROGRESS-I

Q1) Define word counting analysis.

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Q2) Briefly discuss three characteristics of content analysis.

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17.5 TYPES OF CONTENT ANALYSIS

Sanders and Pinhey have suggested five types of Content Analysis:

1. **Word Counting Analysis:** This is counting the use of certain key words in different texts. For example, one can count the word, “democracy” and ‘totalitarianism’ to measure the degree of democratization in five nations— India, America, England, Canada and France—in a sample of elite newspapers. The object could be to find out whether there were any blatant differences between the nations as represented by elite newspapers. This may involve several months of numerous codes and analysis. Similarly, terrorism and

authoritarianism can be studied in Pakistan, Israel, Afghanistan, etc.

- 2. Conceptual Analysis:** This is the analysis of words grouped into conceptual clusters (ideas) that constitute variables in a research hypothesis. For example, a conceptual cluster may be formed around the idea of deviance. Words like, crime, anomie, corruption, assault, juvenile delinquency sexual harassment, embezzlement, etc. could all be clustered around “deviance”.

Using conceptual analysis, a researcher may want to find relationships between public concern in different sectors of society through the analysis of newspapers articles that attempts to connect one sector with another. For example, between 1970-1990, corruption was rampant and so was increase in crime; poverty was booming and so was crime, purchasing MLA’s or MPs became a common practice for forming ministries and so was increase in corruption. Thus, Content Analysis connects corruption and deviance, economy and deviance, and values of deviance. Here the cluster would be:

Deviance: Corruption, embezzlement, fraud cheating, smuggling.

Economy: Poverty, unemployment, inflation.

Values: Tradition, morality, authority, respect.

- 3. Semantic Analysis:** In this, the researcher would be interested not only in the type of words used but also in scaling their intensity weights, like using weak and strong words, positive and negative words, and so on. For positive and strong words, plus (+) score would be used and for negative and weak words minus (–) score would be used for example, love (+2) dislike (-1), and so on. Measuring these positive and negative scores, community’s feeling can be assessed through Content Analysis.
- 4. Evaluation Assertion Analysis:** Suppose relation between labour and entrepreneurs are to be analyzed during labour movement through Content Analysis of newspaper articles. By finding out how one treated the other by use of certain worlds, it becomes possible to point out conditions that led to strike.
- 5. Contextual Analysis:** This is used to predict future verbal behaviours based on the analysis of known words and concepts, e.g., by use of words like militant, firing, bombing, explosions, etc., one can establish scales for known verbal behaviours.

17.6 SOURCES OF DATA FOR CONTENT ANALYSIS

Since Content Analysis is done through written materials, five sources are said to be important in collecting data. These are

- (i) Printed material i.e., newspapers,
- (ii) Books and Magazines,
- (iii) Documents,
- (iv) Filmed material, and
- (v) Records

1. Newspapers: These are the most widely available form of written words. They not only report national, international, and state of local events but also deal with social, political, economic and cultural issues. They present the opinions of the intellectual's experts as well as the common people. Newspapers thus provide a wealth of information.

2. Books and Magazines: These too serve as possible source for content analysis. Various collections of books, magazines and documents available in libraries could be used for examining anything from simple to complex issues or from old to current topic.

3. Documents: available in archives may be more difficult to obtain and if available at all requires special handling and care. Many a time letters written to kin, friends reveal fascinating views of the social situation during the specific period of history. For example, letters written by Shri Jawaharlal Nehru, the first Prime Minister of India, give insight into the national freedom movement.

4. Films: including videotapes provide another source of data. By analyzing the content of films, one can pick out themes, issues and beliefs for analysis. Serials convey interests and choices of people.

5. Records: are obtained through sorting out files from offices, archives, college libraries, information centers etc., e.g., correspondence between Viceroy and Congress leaders during struggle for independence period. The Parliament record contains all the speeches, testimony and other bits of information that occurs in legislative bodies.

17.7 STRENGTHS OF CONTENT ANALYSIS

1. One of the significant advantages of Content Analysis is that it is thoroughly unobtrusive method i.e., it has no effect on the subject being studied.
2. It makes possible a variety of cross – cultural studies that might not be unfeasible using other methods.

3. It can be used to test preliminary ideas, hypothesis or theories prior to more complete investigations.
4. It is a powerful tool for evaluating personal or social values.
5. This method is more useful where research budget is small and resources are limited.
6. It is easier to repeat the study through this method. Repetition of study through other methods may not be feasible either because the event under study may no longer exist or because of costs in time and money.

17.8 LIMITATIONS

1. Since Content Analysis is a heavily planned method, it lacks the spontaneity and unplanned qualities of field research.
2. Determining validity is difficult. For example, it can be asked whether the newspaper give the real values and feelings of the workers during the strike. The answer could be probably not.
3. Some required documents may not be available to the researchers which may affect the conclusions.
4. It is susceptible to bias.

17.9 LET US SUM UP

In conclusion, we can say that content analysis is an objective research technique for inferring the characteristics, courses and effects of communication. It is unobtrusive research.

17.10 GLOSSARY

1. **Content analysis in research:** It is a systematic method used to identify, quantify, and analyze the presence of certain words, themes, or concepts within qualitative data (like text, images, or audio).
2. **Content:** Refers to the material being analyzed, which can include written text, images, audio, video, or any other form of communication.
3. **Coding:** The process of breaking down the content into categories or units that can be systematically analyzed.
4. **Manifest Content:** The surface-level, literal meaning of the content.

5. **Latent Content:** The underlying or implied meaning of the content.
6. **Units of Analysis:** The specific elements within the content that are being coded and analyzed (e.g., words, phrases, themes, characters, etc.).
7. **Coding Units:** Observable and measurable aspects of the content used to categorize data.

17.11 SELF ASSESSMENT QUESTIONS

Q1. Elaborate different types of methods used in content analysis.

Q2. Discuss various limitations of content analysis.

17.12 LESSON END EXERCISE

Here are some multiple-choice questions on content analysis:

1. What is the primary purpose of content analysis?

- a) To conduct experiments with human participants
- b) To systematically analyze and interpret communication content
- c) To observe and record behaviors in a natural setting
- d) To measure the physical properties of a sample

2. Which of the following is a key step in content analysis?

- a) Conducting a literature review
- b) Formulating research questions
- c) Defining units of analysis and coding categories
- d) Performing statistical significance tests

3. What is the purpose of coding in content analysis?

- a) To randomly select data
- b) To assign labels to text to identify themes and concepts
- c) To create a control group for comparison
- d) To ensure the validity of the research instrument

4. Which statement best describes manifest content analysis?

- a) It focuses on the underlying, hidden meaning of the content
- b) It involves analyzing the surface-level structure of the text
- c) It is only applicable to qualitative data
- d) It is a method that requires in-depth interpretation

5. Which of the following is a key advantage of content analysis?

- a) It is a reactive method that can alter participant behavior
- b) It is an expensive and time-consuming process
- c) It is a flexible and non-reactive research method
- d) It can only be used to analyze quantitative data

6. Content analysis is a research tool used to determine the presence of certain:

- a) Variables, but not concepts
- b) Words, themes, or concepts within given qualitative data
- c) Physical properties, but not meanings
- d) Behaviors, but not communication content

7. What is a key characteristic of relational content analysis?

- a) It focuses on the meaning and use of words and phrases
- b) It is focused on explicit, surface-level data
- c) It is a purely quantitative research method
- d) It is a technique focused on the statistical significance of words

8. Which of the following is NOT an element considered when performing content analysis?

- a) Words
- b) Characters
- c) Themes
- d) Emotional intelligence

17.13 ANSWER KEY (LESSON END EXERCISE)

Answers: 1-b, 2-c, 3-b, 4-b, 5-c, 6-b, 7-a, 8-d

17.14 SUGGESTED READINGS

- Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
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LIFE HISTORY AND ORAL HISTORY

STRUCTURE

- 18.0 Learning Objectives**
- 18.1 Introduction**
- 18.2 Meaning and Definitions of Life History**
- 18.3 Life Histories: Their underlying assumptions**
- 18.4 Criteria for the life History.**
- 18.5 Meaning and definitions of Oral History**
- 18.6 Feminist study and oral history**
- 18.7 Types of oral history**
- 18.8 Who is studied by the oral historian**
- 18.9 Terminological variety**
- 18.10 Let Us Sum Up**
- 18.11 Glossary**
- 18.12 Self-Assessment Questions**
- 18.13 Lesson End Exercise**
- 18.14 Answer Key**
- 18.15 Suggested Readings**

18.0 LEARNING OBJECTIVES

Dear learner, the main objectives of this lesson are to familiarize you with: -

- **Meaning of Life History**
- **Underlying Assumptions of Life History**
- **Criteria for the life History**
- **Meaning of Oral History**
- **Various types of Oral History**
- **Studies on the Oral Historian**

18.1 INTRODUCTION

Social scientists, in their study of human behaviour, strive to obtain a fundamentally real and enlightened record of personal experiences which would reveal in concrete detail a man's inner strivings, tensions, motivations that drive him to action, the barriers that frustrate him or challenge him, the forces that direct him to adopt a certain pattern of behaviour and to live according to a certain scheme and philosophy of life. Only some of man's experiences can be learned by observing him in action. To understand misbehavior fully and intimately, he must supply a detailed and penetrating account of what he does and has done, what he thinks he does and has done, what he expects to do, and says he ought to do. A fairly exhaustive study of a person or group is called a life or case history.

Typically, oral histories are not even discussed in research methods texts. This is so because mainstream social scientists find little value in studies of individuals that draw on subjectivity and there is little discussion of and training in this method, and little agreement on terms. Typically, the only context for oral histories in mainstream social sciences is in ethnographies or community studies. Although there was some interest in the first quarter of the twentieth century in the United States, the method has long been overshadowed by other approaches to social science research. In doing an oral history, the researcher's purpose is to create a written record of the interviewee's life from his/her perspective in his/her own words. Judy Long, a theorist of socio-biography stressed the value of this perspective for the social sciences.

18.2 MEANING AND DEFINITIONS OF LIFE HISTORY

Life History means a detailed study of a person or a group over a long period of time. **According to P. V. Young**, “A fairly exhaustive study of a person or group is called a life history”.

Social scientists study many culture groups and small social groups like a family, political party, a gang, a leadership group.

They also study large groups as social units, for example, sects, national and social groups. Social institutions like courts, hospitals, churches, industrial organizations, governmental division— all can be studied as a life history.

18.3 LIFE HISTORIES: THEIR UNDERLYING ASSUMPTIONS

In gathering case data, it may be assumed that the identity of human nature persists, by and large, in a variety of circumstances, even though human conduct changes. All human beings share a basic humanity in spite of unique experience and personal characteristics. Cora Du Bois, on the basis of her various studies in southern Asia concludes;

“There are certain experiences and certain psychologically determined tensions, felt subjectively as desires, which no human being escapes, however differently he may seek to satisfy them and however different the level of satisfaction may be. Birth and death, growth and sexual desire, fatigue, laughter, and hunger are among some of these experiences.”

This does not mean that there are no pronounced differences among various cultural groups or persons. Common sense tells that the customs and the way of life of an Indian would make him strikingly different from a Turk. Theoretical Sociologists and social philosophers assert that if we accept a law of nature, our very acceptance implies a belief in uniformity. “In establishing uniformity” they say, “one relates an event to ‘the conditions under which it occurs. This is causation in its broadest and least particularistic sense.”

Gordon All port goes as far as saying that “there are lawful happenings which occur uniquely in human life. Certain statements of tendency in human nature seem approximately true for every mortal or for large groups of mortals. There is no reason why some of these tendencies cannot be traced through a comparative study of documents (personal). All research pertaining to particular individuals is based on the above assumptions.

18.4 CRITERIA FOR THE LIFE HISTORY

John Dollard’s discussion of the criteria for the life history still remains the most penetrating on the subject. His volume, under the same title, and close to 300 pages, should be read in its entirety. Here we can review in the barest outline some of the main points which serve for judging the

adequacy of life history techniques as well as to indicate some of the contents of the life history data.

1. The subject must be viewed in a cultural series. He must be regarded as a member of a culture group or a community. Community values, standards, and ways of life can be studied only through life histories of persons.
2. Behavior of individuals must be viewed as socially relevant. That is behavior should be seen as arising in response to definite social stimulations.
3. The family of the subject of study must be viewed in its role of submitting the culture and way of life of the group through its individual members.
4. The specific method of elaboration of organic materials into social behavior must be shown.
5. The continuous related character of experience from childhood through adulthood should be stressed.
6. The “Social Situation” must be studied in order to learn kind and degree of social pressure, social forces, social participation or abstention, exercised by the subject.
7. The life history material must be organised and conceptualized.

It is remarkable that Dollard, strongly psychoanalytically oriented, stressed cultural factors—in five out of seven criteria—as essential in life history data. He also stressed that case studies of persons should have their starting point not in the life history of that person but in social situation and group of which he is part. Also, Dollard aptly laid considerable emphasis on “specific series of coordinated, related, continuous, configurated experiences in a complex culture pattern,” which motivate social and personal behavior.

His fourth criterion, however, “The specific method of elaboration of organic materials into social behavior must be shown” -needs qualifications from a sociological point of view. A score or more theories, before Dollard’s publications, have sought to connect the “organic materials” and “social behavior.” This very multiplicity of theories indicates well how difficult a task such as connection is and how little success has been attained in doing so. To be sure, occasionally we find a few colorful cases which point to the possibility of establishing some direct connection in human behavior between organic constitutions of social situation, but in general, we are still unable to establish specific relationship between them.

The uniformities and differences which the research student seeks, at least in the social sciences, are cultural rather than organic in nature. The permutation and combinations found in the human frame, are for our purposes, infinite, hence they are not specific determinants of behavior. Criteria for the life history must take full account of this basic fact. And for this reason, it may be quite impossible in any realistic way to show, as Dollard requires, the specific method of elaboration of organic materials into

social behavior.

18.5 MEANING AND DEFINITIONS OF ORAL HISTORY

1. **The MacMillan Dictionary of Anthropology defines oral history as**, “A source of information not only about contemporary cultural and social systems but also about the history of the group.” The concept of oral history can be linked to that of the folk society and folklore. The oral history is that part of a society’s cultural knowledge or traditional culture which is passed on orally rather than in written form, and stands in opposition to the literate tradition.
2. **According to Elizabeth Higginbotham**, “In oral history the researcher’s purpose is to create a written record of the interviewee’s life from his/her perspective in his/her own words”.

18.6 FEMINIST STUDIES AND ORAL HISTORY

Just as in past, contemporary feminist researchers are interested in oral histories and biographical work for several reasons: to develop feminist theory, express affinity and administration for other women, contribute to social justice, facilitate understanding among social classes, and explore the meaning and events in the eyes of women. Each of these will be discussed briefly using the researchers own words.

Margaret Randall collected oral histories of women involved in the Nicaraguan Revolution against Somoza. She deliberately, talked with women from very different backgrounds whose level of involvement varied widely because she wanted to know how they began to articulate their need to join in the political struggle, how they made the decision, a decision that would affect every facet of their lives; and how they overcame the traditional obstacles thrown up by the family and the social prejudice. Her purpose was to illustrate the relation between feminism and feminist theory.

Similarly, Pat Taylor uses oral history to express her respect for a faith healer who is a model of a strong, individualistic woman coming into her own powers without benefit of the support either husband or community would usually provide. Feminist oral history acknowledges the value of the women’s lives. It encourages identification among women through the recognition of common experiences.

In some instances, feminist researcher beings with one purpose and find that her material leads her in new directions. Some feminist scholars believe that injustices can be righted when “People tell their stories”; other believes that history can be improved. But these are two aspects of the same phenomenon. The production of an oral text may “right the injustice” of a particular person and make his/her voice being heard. At the same time oral history corrects the biased view of history that had not included her/their voice.

18.7 TYPES OF ORAL HISTORY

Sociologist Sherna Gluck continues the foregoing quote by explaining that oral history is an encounter because it creates new material, experience, enhances communication and develops a previously denied sense of continuity. She subdivides oral history into types:

1. **Topical:** Similar to an open-ended interview.
2. **Biographical:** (Concerns an individual other than the interviews, or follows a life history format) and
3. **Autobiographical** (the interviewee’s life determines the forms and content of the oral history.)

18.8 WHO IS STUDIED BY THE ORAL HISTORIAN

Oral histories are typically though not exclusively done with two frequently overlapping types of people: older and relatively powerless people. In many societies older individuals are seen as repositories of historical knowledge. They may have the time and inclination to share what they know, but may lack access to publication and may not choose to express themselves in written form. Many feminist writers and researchers have adopted the oral history method precisely for the purpose of enabling people to publish their views who otherwise would not have done so. For example, in a play on the “speak out” concept, which she calls a “sing out;” Patrica Sexton presents her study of largely unseen and unrecognized hospitals workers. Her book represents a unique amalgam combining analysis of the problems of hospital workers with their own testimony about their lives.

18.9 TERMINOLOGICAL VARIETY

A striking feature of the literature on Oral history is the lack of uniformity in terminology, as in the case of interviewing. Because of the variety of terms, people may be doing similar research under different labels. The following terms are used interchangeably with oral history: case studies, in-depth life history, interviews, biographical interviews, life histories, and personal narratives.

Marcia Wright's comment that life histories are "ambiguously authored" shows one of their perplexing features. The subtle lines she draws among oral history, interviews, biographies, and autobiographies mean that features of each method are shared by others. For example, oral history and autobiography involve a person telling her own life history. The fact that oral histories are typically created through interaction, however, means they draw on another person's questions. That person may inhabit a very different culture.

Interviews and oral histories, too, are similar, but interviews focus typically on a particular experience or phenomenon, while oral histories deal more broadly with a person's past. Oral histories generally range over a wide range of topics, perhaps the person's life from birth to the present. In her study of incarcerated women in Massachusetts, for example, Mary Gilfus used oral histories to understand the chronology of the woman's experiences from her earliest memories to the present. To accomplish this, she used a set of questions that ensured coverage of certain topics such as family composition, childhood development, family patterns of substance abuse, educational history, physical and sexual violence etc. The openness and thoroughness of these oral histories enabled Mary Gilfus to see that being sexually abused as children destroyed these women's ability to distinguish right from wrong and prepared them, even as very young children, to be exploited by others. Oral histories also differ from biographies in the method of transmission. Biographies take a written form while oral history is narrated in a verbal form.

18.10 LET US SUM UP

So, in conclusion we can say that life history involves an exhaustive study of a person or group. To understand his behavior, a person must supply a detailed and penetrating account of what he does and has done, what he thinks he does and has done what he expects to do and says he ought to do.

We can also say that some histories must be transmitted orally because the individual is incapable of writing. Oral testimony is invaluable for historians who seek information unlikely to be contained in written records. To the extent that men's lives are more likely to produce written documentation, men are more likely to be the subject of analysis by historians who use archival data. Thus, oral history in contrast to written history is useful for getting information about people less likely to be engaged

in creating written records and for creating historical accounts of phenomenon less likely to have produced archival material. Relatively powerless groups and the older people who have long past experience to share are therefore especially good candidates for oral history research.

18.11 GLOSSARY

1. **Oral history:** It is a research method that uses personal narratives and memories, typically gathered through recorded interviews, to construct historical accounts.
2. **Primary source:** Oral history interviews are considered a primary source of historical information.
3. **Personal narratives:** The focus is on individual accounts and memories, often capturing perspectives not found in traditional written records.
4. **Subjectivity:** Oral history acknowledges the subjective nature of memory and personal experience.
5. **Dynamic interaction:** The interview process involves a dynamic exchange between interviewer and interviewee, shaping the narrative.

18.12 SELF ASSESSMENT QUESTIONS

Q1. Define the term Oral History.

Q2. What do you understand by Life History.

Q3. Discuss various types of Oral History.

18.13 LESSON END EXERCISE

- **MULTIPLE CHOICE QUESTIONS**

Question 1

What is the primary objective of life history research?

- a) To statistically measure the frequency of a specific event in a population
- b) To provide a holistic and contextualized understanding of a person's lived experiences
- c) To design and conduct controlled experiments to test hypotheses
- d) To analyze the economic factors that influence spending habits in a society

Question 2

Which of the following is a key characteristic of the life history method?

- a) Relying solely on secondary data and archival records
- b) Focus on the individual and their personal journey
- c) Conducting large-scale surveys with closed-ended questions
- d) Utilizing random sampling to ensure generalizability

Question 3

Life history research is a qualitative method that can be used to:

- a) Determine cause-and-effect relationships between variables
- b) Create a narrative from an individual's perspective
- c) Quantify the distribution of a specific social phenomenon
- d) Perform experiments in a laboratory setting

Question 4

The tradition of "telling stories" From one generation to the next is similar to which research method?

- a) Experimental research
- b) Descriptive research
- c) Life history research
- d) Ethnography

Question 5

What kind of data is a life history narrative primarily composed of?

- a) Numerical data from surveys

- b) Detailed, personal stories shared by individuals
- c) Data from a single, controlled experiment
- d) Statistical analyses of past census records

18.14 ANSWER KEY (LESSON END EXERCISE)

Answer: 1-b, 2-b, 3-b, 4-c, 5-b

18.15 SUGGESTED READINGS

- Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
- Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.

VALIDITY AND RELIABILITY IN QUALITATIVE RESEARCH

STRUCTURE

- 19.0 Learning Objectives**
- 19.1 Introduction**
- 19.2 Meaning of Reliability**
- 19.3 Types of Reliability**
- 19.4 Meaning of Validity**
- 19.5 Types of Validity**
- 19.6 Difference between Validity and Reliability**
- 19.7 Let us Sum up**
- 19.8 Glossary**
- 19.9 Self-Assessment Questions**
- 19.10 Lesson End Exercise**
- 19.11 Answer Key**
- 19.12 Suggested Readings**

19.0 LEARNING OBJECTIVES

Dear learner, the main objectives of this lesson are to familiarize you with: -

- **Meaning and Definitions of Validity and Reliability.**

- **Types of Validity and Reliability**
- **Importance of Validity and Reliability in Measurement.**
- **Difference between Validity and Reliability.**

19.1 INTRODUCTION

Science depends on accurate and systematic measurement. Because researchers must demonstrate that they are recording events accurately, scientific instruments are tested regularly for accuracy. Obviously, instruments that do not give true reading are not useful. Though dependence on instruments is necessary, for all science, demonstrating reliability and validity in the social science is often more difficult than it is in the natural sciences. In the natural sciences e.g., official standards for items such as weight, temperature or chemical purity are available for testing instruments. Social scientists do not have this luxury. Measuring such things as attitude or intelligence is very difficult because there is no universally accepted ‘official standards.

The credibility of field studies, naturalistic observations, and archival research depends on clear and convincing evidence that recording techniques are acceptable. Thus, investigation must demonstrate that behavioural measures are reliable and valid. Reliability and validity refer to data collection. That is, they refer to whether data recording devices are reliable and valid and to whether surveys, tests or observational systems really addresses what the investigator is studying.

19.2 MEANING OF RELIABILITY

Reliability refers to the ability of an instrument to produce consistent or same results. Since a grocer obtains the true measure of a commodity by a kilogram, a cloth merchant obtains true length of cloth by a meter, and a tailor by an inch-tape, these measuring instruments have to be reliable Reliability is the degree to which measures are free from error so that they give same results when repeat measurements are made under constant conditions. If there are imperfections in the measuring process and the respondent misunderstands the question, or understands the question but does not give a truthful response, it will be the cause of low reliability of measurement.

19.3 TYPES OF RELIABILITY

There are four types for testing the reliability of an instrument, these are: –

- (i) Test-Retest Reliability:** This means administering the same scale or measure to the same

respondents at two separate times for stability. It will be reliable if the reported test administered under conditions similar to the first test obtains similar results.

- (ii) **Internal consistency reliability:** It refers to the degree of agreement between various items on the measurement device. While assessing aggression among children on a playground, one could record many types of behaviour. These could be acts of physical violence, vocal outbursts, angry gestures of facial expressions etc. One would record many types of each and then check to see if certain behaviour correlates with others.
- (iii) **Split half reliability:** Here responses, to the items of an instrument are divided and the scores correlated. The degree of co-relation indicates the degree of reliability of measurement. The test could alternatively be divided into more parts– thirds, quarters etc.; provided all the items are comparable. The correlation is then corrected to give the stepped-up reliability of the whole test.
- (iv) **Equivalent form reliability:** It is utilized when two alternative instruments are designed to be as equivalent or possible. Each of the two measurement scales is administered to the same group of subjects. If there is high correlation between the two forms, the researcher assumes that the scale is reliable.

19.4 MEANING OF VALIDITY

Validity means the ability to produce findings that are in agreement with conceptual or theoretical values. e.g., an attitude measurement technique may indicate that 80 percent people are in favour of using family planning measures. But 80 percent people may not actually use these methods. A reliable but invalid instrument will yield consistently inaccurate results. So, validity refers to the success of the scale in measuring what is meant to be measured. Many a times, the scale used may be reliable but it measures something other than what it was designed to measure.

19.5 TYPES OF VALIDITY

1. **Empirical Validation:** It tests pragmatic or criterion validity. If an instrument has, for instance, produced results indicating that students involved in student union activities do better in their exams, and if this is supported by available data, the instrument in question has pragmatic validity. Again, validity here is assumed if the findings are supported by already existing empirical evidences. In this case validity is concurrent validity.
2. **Theoretical Validation:** It is employed when empirical confirmation of validity is difficult or not possible. A measure is taken to have theoretical validity if its findings comply with the

theoretical principles of the disciplines, that is, if they don't contradict already established rules of the discipline.

3. **Face Validity:** An instrument has face validity if it seems to measure what it is expected to measure "on the face of it". In such a case, it appears to have validity, e.g., a questionnaire aimed at studying sex discrimination has face validity if its questions refer to discrimination due to sex. The standard of evidence here is not based on empirical evidence, as it was in the case of the other types of validation, but on general theoretical standards and principles, and on the subjective judgments of the researcher.
4. **Content Validity:** A measure is supposed to have content validity if it covers all possible aspects of the research topic. If a measure of operation, for instance, does not include normlessness or powerlessness the researcher cannot claim content validity for this instrument.
5. **Construct Validity:** A measure can claim construct validity if its theoretical construct is valid. For this reason, validation concentrates on the validity of the theoretical construct. For example, if discrimination of female students is the research topic, we proceed as follows: an instrument is constructed to study this topic. Then two student groups known to differ in their views on basic issues related to the research question are identified. Next the instrument whose validity is to be checked is administered to both groups of the results recorded separately for each group. If the findings obtained from each group differ, the instrument is thought to have construct validity.

19.6 DIFFERENCE BETWEEN VALIDITY AND RELIABILITY

Zikmund has illustrated the difference between reliability and validity by an example of an old and a modern rifle. The shots by a marksman from the old rifle (target A) are considerably scattered but from the new rifle (target B) are closely clustered, showing thereby that the old rifle is less reliable. In target C, shots with the modern rifle may be reliable but if his vision is not proper, the marksman may not be able to hit the bull's eye.

19.7 LET US SUM UP

So, we can say that research in social sciences involves studying behaviours. Accurately recording what subjects are doing is difficult and research is always in danger of being influenced by the expectations of the researchers. The concept of validity and reliability are employed to ensure the soundness of consistency of measurement techniques. Validity refers to whether research actually measures what it was intended to measure; reliability refers to whether the research produces

consistent results. So, sound measurement must meet the tests of validity and reliability.

19.8 GLOSSARY

1. **Validity:** It assesses the accuracy of a measurement tool. It indicates whether a test measures what it is intended to measure.
2. **Reliability:** It assesses the consistency and repeatability of a measurement tool. It indicates how likely you are to get the same results if you repeat the measurement under the same conditions.
3. **Qualitative Research:** Qualitative research is a method of inquiry that explores and understands the why and how of human behavior and experiences, focusing on in-depth understanding rather than numerical data.

19.9 SELF ASSESSMENT QUESTIONS

Q1. Discuss any three types of reliability in detail.

Q2. Differentiate between validity and reliability.

Q3. Elaborate any two types of validity in detail.

19.9 LESSON END EXERCISE

- **MULTIPLE CHOICE QUESTIONS**

1. Which of the following is true about the relationship between reliability and validity?

- A. A test can be valid without being reliable.
- B. A test can be reliable without being valid.
- C. A test must be reliable to be valid.
- D. Reliability and validity are the same concept.

2. What does reliability refer to in research?

- A. The accuracy of a measure.
- B. The degree to which a measure is consistent.
- C. The degree to which a measure is generalizable.
- D. The degree to which a measure is practical.

3. What is validity in research about?

- A. The ability to produce consistent results.
- B. The ease of data collection.
- C. The degree to which an instrument measures what it is intended to measure.
- D. The ability to generalize findings.

4. Which of the following is a method used to assess the reliability of a research instrument?

- A. Face validity
- B. Construct validity
- C. Test-retest reliability
- D. Criterion validity

5. What does concurrent validity measure?

- A. The degree to which a test correlates with a future outcome.
- B. The degree to which a test correlates with an existing, established measure at the same time.
- C. The degree to which a test appears to measure what it is supposed to measure.
- D. The degree to which a test measures a theoretical construct.

19.11 ANSWER KEY (LESSON END EXERCISE)

Answer: 1-b, 2-b, 3-c, 4-c, 5-b

19.12 SUGGESTED READINGS

1. Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
2. Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
3. Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.

CODING AND EDITING

STRUCTURE

- 20.0 Learning Objectives**
- 20.1 Introduction**
- 20.2 Editing of data**
- 20.3 Types of Editing of Data**
- 20.4 Significance of Editing**
- 20.5 Coding of data**
- 20.6 Types of analysis in coding**
- 20.7 Types of coding**
- 20.8 Data classification/ distribution while coding**
- 20.9 Steps in data analysis after coding**
- 20.10 Need of coding in social science research**
- 20.11 Let us sum up**
- 20.12 Glossary**
- 20.13 Self-Assessment Questions**
- 20.14 Lesson End Exercise**
- 20.15 Answers to check your progress**
- 20.16 Suggested Readings**

20.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson, you will be able to:

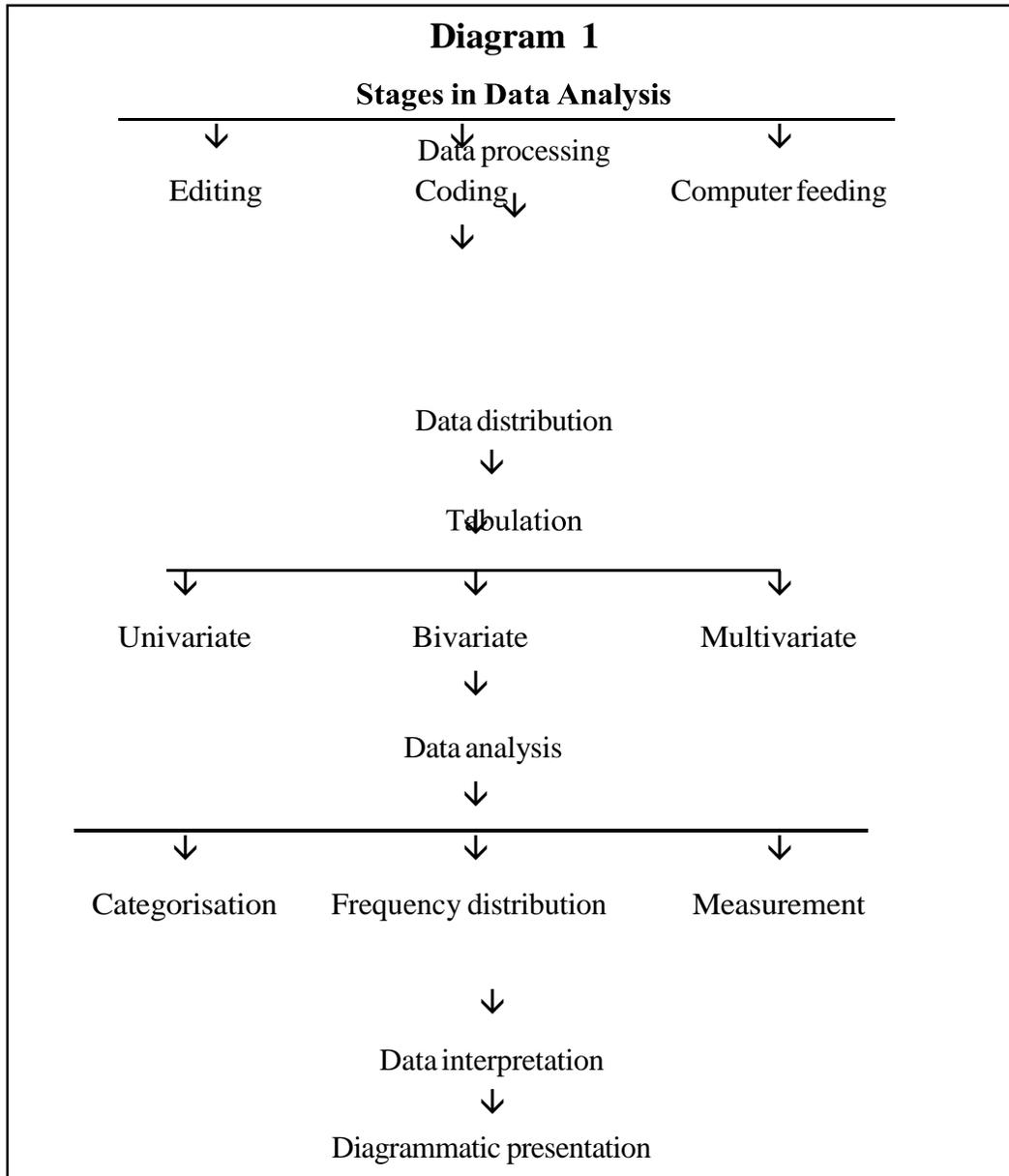
- **Understand the meaning of editing and coding data.**
- **Know how the data should be edited and coded by using different techniques.**

20.1 INTRODUCTION

Data reduction or processing mainly involves various manipulations necessary for preparing the data for analysis. The process (of manipulation) could be manual or electronic. It involves editing, categorizing the open-ended questions, coding, computerization and preparation of tables and diagrams.

20.2 EDITING OF DATA

Information gathered during the stage of data collection varies in nature and quantity from study to study. For example, when surveys are conducted and data obtained through questionnaires and schedules, the answers either may not be ticked at proper places, or some questions may be left unanswered, or may be given in a form which needs reconstruction in a category designed for analysis, e.g., converting daily/monthly income in annual income, or identifying family structure (nuclear or joint) on the basis of kin living together and functioning under the common authority, and so on. Suppose, in business research, in one question, “is your industry, one of the largest, or about average in size, or small”, the respondent ticks both largest and average and writes “average in sale but one of the largest in chain of chemical industries”. The researcher has to take a decision as to how to edit it and whether identify it as largest or average industry.



Checking also needs that data is relevant and appropriate and errors are modified. Occasionally, the investigator makes a mistake and records an impossible answer. “How many red chilies do you use in a month?” The answer is written as “4 kilos”. Can a family of three members use four kilo Chilies in a month? The correct answer could be “0.4 kilo”. Similarly, an answer to the

question “how much money do you spend in a year on education of your children” says “Rs 30,000”. This answer may not be wrong because the fees of one child in a good public primary school these days could be Rs. 15,000 charged in two installments in a year. But this answer will be confusing if the respondent says his monthly income is Rs. 5,000. A family which educates its children in a costly public school cannot survive on monthly expenses of Rs. 2,500. Such answers need editing.

Editing is required for proper coding and entering in the computer (when decision is taken not to analyse the data manually). Editing thus means that the data are complete, error-free, readable and worthy of being assigned a code. Editing process begins in the field itself. Interviewers, soon after completing the interview (for filling the schedule), should check the completed forms for errors and omissions. They can complete the incomplete responses and reduce the number of ‘no answers’ with the rapid follow-up, stimulated by field editing. In many cases, field editing may not be possible. In such cases, in-house editing may help.

Editing also occurs simultaneously with forming categories, e.g. age given by the respondents (in questionnaire, schedule or interview) may be put in the category of below 18 years (very young), 18-30 years (young), 30-40 years (early middle-aged), 40-50 years (late middle-aged) and above 50 years (old). Field supervisors can do editing in the field itself by re-contacting the respondents. Editing can be done along with coding too.

Editing also requires re-arranging answers to open-ended questions. Sometimes “don't know” answer is edited as “no response”. This is wrong. “Don't know” means that the respondent is not sure and that a double mind about his reaction or is not able to formulate a clear-cut opinion, or considers the question personal and does not want to answer it. “No response” means that the respondent is not familiar with the situation/object/event/individual about which he is asked.

20.3 TYPES OF EDITING OF DATA

1. Editing for quality: Quality is very important aspect while formulating and collecting data. To ensure the quality of the data the following should be taken care of:

- a. the data forms should be complete,
- b. the data should be free from bias,
- c. the recordings are free from errors,
- d. there should be no inconsistencies in responses within limits
- e. there should be evidences to show dishonesty of enumerators or interviewers and

- f. there should not be any willful manipulation of data.

2. Editing for tabulation: Editing for tabulation is done for certain accepted modification to data or even rejecting certain pieces of data in order to facilitate tabulation.

3. Field Editing: The questionnaire filled up by the researcher or the respondent might have some abbreviated writings, illegible writings and the like. These are rectified by the researcher. This should be done soon after the researcher or interview before the loss of memory. The field editing should not extend to giving some guess data to fill up omissions.

4. Central Editing: It is done by the researcher after getting all schedules or questionnaires or forms from the enumerators or respondents. Obvious errors can be corrected. For missed data or information, the editor may substitute data or information by reviewing information provided by likely placed other respondents. A definite inappropriate answer is removed and “no answer” is entered when reasonable attempts to get the appropriate answer fail to produce results.

20.4 SIGNIFICANCE OF EDITING

1. It is pre-requisite for accuracy.
2. It is useful in the elimination of the incorrect reply.
3. It ensures the consistency of the data collected and avoids contradictions.
4. It is useful to convert the answers into uniform units of measurement before coding

20.5 CODING OF DATA

Coding is essential for organizing and structuring gathered information systematically, facilitating its categorization, compilation and structuring. It acts as a vital bridge connecting data collection to the interpretation phase in research methodology, laying the groundwork for subsequent analysis. The initial step in scrutinizing data, coding is indispensable in the research process.

Data obtained from surveys, experiments or secondary sources often exists in a raw format, requiring refinement and organization through codification for effective evaluation and conclusion drawing. However, data coding is a complex endeavour that demands knowledge and experience from those involved.

At its essence, coding involves indexing textual data by assigning codes, which can be keywords, phrases, or numerical identifiers, to specific segments containing relevant information. Each code in a comprehensive list is linked to corresponding text segments, serving to represent the subject matter discussed. Researchers employ coding to analyze findings, especially with numerical and qualitative data that may necessitate conversion, such as in survey processes.

Coding systematically organizes and arranges data, enabling concise summarization and synthesis of information. It forms the foundation for analysis development by linking data collection with interpretation. Codes facilitate the retrieval and grouping of specific text segments based on thematic aspects, akin to an index in a book or research project, aiding in locating pertinent information within collected data.

20.6 TYPES OF ANALYSIS IN CODING

Coding involves the methodical arrangement of information, encompassing both qualitative data sources like interviews and quantitative sources such as questionnaires, to aid in analysis. While coding is primarily utilized in quantitative research, which deals with numerical data, it also holds significance in qualitative research. In qualitative studies, narratives are utilized to capture respondents' viewpoints, making coding a vital technique for organizing textual data.

Each survey response requires coding, although the process differs between closed and open-ended questions. Closed questions involve assigning numerical values to responses, like:

Yes=1

No=2

Can't say=3, and so forth.

Since we already know the potential response options, this streamlines data entry and analysis. With open-ended questions, coding involves creating a thorough list of categories (known as a coding frame) to systematically assign codes to answers. This task requires substantial time and careful consideration. Thus, coding functions as an analytical process where data, whether

quantitative (e.g., questionnaire results) or qualitative (e.g., interview transcripts), is methodically classified to aid in subsequent analysis:

1. Quantitative Analysis: For quantitative analysis, data typically undergoes coding, categorizing it into nominal or ordinal variables. Questionnaire data can be handled in several ways:

- Pre-coding involves assigning codes as data becomes available, often during fieldwork.
- Post-coding occurs after completing questionnaires, particularly for open-ended questions.
- Office coding takes place after data collection from the field.

These coding methods are not mutually exclusive. In the realm of social sciences, various spreadsheet tools like Excel and sophisticated software packages are utilized:

- **R and MATLAB:** R, an open-source programming language, and MATLAB, a numerical computing environment, are commonly used for statistical computing and graphics.
- **SPSS:** This software package is employed for logical batched and non-batched statistical analysis.
- **SAS:** Developed by SAS Institute, SAS is utilized for advanced analytics, multivariate analyses, business intelligence, data management, and predictive analytics.
- **DAP:** DAP is a statistics and graphics program used for data management, analysis, and visualization tasks commonly required in statistical consulting practice.

2. **Qualitative Analysis:** In disciplines favouring qualitative methods such as ethnography, human geography, or phenomenological psychology, various coding approaches can be employed. Manual coding involves techniques as simple as highlighting concepts with different colours, while automated coding involves using software packages like Atlas, QDA Miner, and NVivo.

20.7 TYPES OF CODING

Following are the main types of coding:

1. Open Coding: This initial stage of coding primarily focuses on delineating unique concepts and categories within the data. It serves as a fundamental unit of analysis, involving the breakdown of

data into primary concepts, often referred to as master headings, and secondary categories, also known as subheadings.

2. Categorized Coding: In academic research, open coding is frequently employed to identify and categorize various concepts. For instance, when interview subjects consistently discuss teaching methods, each mention of teaching methods or related topics is marked with the same color. This process elevates teaching methods to a concept, while related aspects such as types are categorized as sub-concepts, all denoted by consistent highlighting. Distinct colors are utilized to differentiate between different overarching concepts and their respective categories. Following this initial phase, transcripts are transformed into concise outlines, where main concepts serve as primary headings and categories are delineated as subheadings.

3. Axial Coding: Following a primary focus on open coding, the next step involves employing axial coding to define text, concepts, and categories. Axial coding serves to:

- Validate that concepts and categories accurately reflect interview responses.
- Investigate the relationships between concepts and categories.

To explore these connections, the process involves:

- Identifying the conditions that caused or influenced concepts and categories.
- Understanding the social and political context.
- Assessing associated effects or consequences.

For instance, consider the concept of “Adaptive Teaching” with categories such as “tutoring” and “group projects.” An axial code might be a statement like, “Our principal encourages various teaching methods,” which contextualizes the concept and categories. This suggests a potential new category, such as “supportive environment.” Axial coding thus provides a structured approach to analyzing data, ensuring the researcher captures all pertinent aspects and identifies areas for further refinement or expansion.

4. Final Codes: The ultimate codes serve a critical function in identifying discernible patterns within the data, pivotal for progressing to the final evaluation or analysis phase. In data coding, the process of finalizing the codes entails pinpointing significant words and phrases from the observed data. Often, respondents struggle to articulate their thoughts using precise language, necessitating coders to infer meaning from their expressions. These finalized codes resemble topics and themes, providing a foundation for in-depth discussions that culminate in conclusive outcomes. Occasionally, interviewers or observers capture codes while observing respondent behavior, offering valuable insights in research. These codes hold particular significance as they cannot solely be derived from respondents' written responses. Data coders should meticulously consider the verbs and actions conveyed by respondents, recognizing that qualitative data analysis centers on unveiling meanings and interpretations. Thus, coders must possess a discerning eye for these subtleties.

5. Categories of Coded Data: Meaningful names are assigned to the codes, which are then organized into categories. This categorization greatly aids in refining the research process, leading to the identification of patterns and themes within the data. These patterns, crucial for uncovering the true outcomes of the research, are determined by the categories or groupings into which a large amount of data naturally falls. Coding involves the translation of responses into numerical values using a codebook, code sheet, and computer card, all in accordance with the instructions provided in the codebook. Each variable is assigned a specific numerical code in the codebook.

6. Creation of Table: Summarize the concluding ideas and classifications in a structured data table. Emphasize the researcher's method of outlining primary categories and sub-categories before elaborating on them post-table. While creating a tabulated format might seem straightforward, it demands patience and precision. Once coding procedures are thoroughly validated, the table should undergo expert review or, if applicable, be shared with participants to enhance its validity.

20.8 DATA CLASSIFICATION/DISTRIBUTION WHILE CODING

Data distribution serves as a method for categorizing scores across different categories or variables, essential for assigning codes to collected data. It encompasses four main types:

- Frequency Distribution
- Percentage Distribution
- Cumulative Distribution

- Statistical Distributions

1. Frequency Distribution: In social science research, frequency distribution is a widely used method to display the frequency of occurrences within specific categories. There are two primary forms of frequency distribution:

1.1 Ungrouped: This type of distribution involves presenting individual scores without collapsing them into categories. For instance, when examining the ages of students in a Sociology class, each age value (such as 18, 19, 20, etc.) would be listed separately.

1.2. Grouped: In this form of distribution, scores are combined into categories, typically presenting 2 or 3 scores together as a group. For example, instead of listing each individual age, groups like 18-20, 21-22, etc., may be formed to represent ranges of ages within the distribution.

2. Percentage Distribution: You can opt to present frequencies not in absolute counts but as percentages. For instance, rather than stating that 200 out of 2000 respondents had a monthly income of less than 500, you can convey that 10% of the respondents possess a monthly income of less than 500.

3. Cumulative Distribution: The cumulative distribution function provides information on the frequency with which a random variable's value falls at or below a specific reference value.

4. Statistical Data Distribution: In this method of data dispersion, an average is derived from a subset of participants. Researchers have several options for determining averages, including mean, median, and mode, selected based on the research objectives. Once the average is calculated, attention shifts to its representativeness — how closely responses center around it. Is there a tight clustering of responses, or does a considerable range of variation exist?

20.9 STEPS IN DATA ANALYSIS AFTER CODING

In today's world, a data scientist plays a vital role in analysing complex digital data, such as website usage statistics. Their main objective is to aid businesses in making informed decisions. However, it's important to note that data analysis is just one aspect of a larger process aimed at facilitating research and improving decision-making. This process involves the creation of products that autonomously gather, refine, and evaluate data. These products then provide insights and predictions to executive dashboards or reports, with automated systems carrying out tasks accurately.

Here are some steps involved in coding:

- Develop the Data Collection Tool and Gather Data
- Create the Data Dictionary or Codebook
- Prepare Data Matrix Worksheets
- Develop Instructions for Data Entry and Analysis

1. Develop the Data Collection Tool and Gather Data: Creating the data collection tool and gathering data are fundamental stages in any analytical process. This phase entails devising effective methods or instruments to acquire pertinent data, considering what information is needed and how to obtain it. This could entail crafting surveys, questionnaires, or establishing data collection systems like sensors or databases. It's vital to ensure adherence to ethical and legal standards, including obtaining necessary permissions or consent. Once the tools are ready, the actual data collection commences, which might involve conducting interviews, administering surveys, or extracting data from existing sources. This phase establishes the groundwork for subsequent data analysis stages, crucial for acquiring dependable and precise data for decision-making purposes.

2. Create the Data Dictionary or Codebook: When inputting data into computer software, whether it's a spreadsheet, database, or statistical tool, maintaining consistency is essential. It's important to ensure uniformity across all data entries, whether they pertain to individuals, questionnaires, regions, or any other unit of analysis. Many software programs have specific rules governing data entry, storage and retrieval, which should be documented in a codebook.

For instance, variable names are often restricted to eight characters, preferably using letters. While numbers are generally acceptable in variable names, special characters, spaces, or punctuation are typically not allowed. It's advisable to assign variable names that reflect the nominal definitions of the variables, such as "age," "job class," or "seniority."

Establishing consistent rules, like using either lowercase or uppercase letters exclusively for alphanumeric data, can streamline the process of instructing the software which variables to analyze. Data can be stored in various formats, with numeric data being the most common. Numeric data may include decimals, such as 2.3 or 0.888. Alternatively, data can be stored in an alphanumeric format, allowing for a combination of letters and numbers.

Regardless of the format, it's important to avoid spaces, punctuation marks, or special characters in the data. Large numbers should not include commas, and names should steer clear of periods, dashes, quotation marks, etc. A codebook serves as a reference for data entry, providing information on relevant questionnaire questions, variable names, operational definitions, coding options, variable types (numeric or alphanumeric), and the required number of columns for each variable.

3. Prepare Data Matrix Worksheets: When inputting data into a computer program for statistical analysis, it's customary to organize the data in a matrix format. Variable names are listed in the column headers, with each column representing data related to a particular variable. Meanwhile, individual case records are entered row by row. Historically, this procedure required encoding data onto physical cardboard cards, which were subsequently read by card readers, rather than being directly inputted into the computer. When the data surpasses 80 columns, supplementary data matrices need to be generated to contain the excess information for each record.

4. Develop Instructions for Data Entry and Analysis: Data can be encoded directly either during data collection, such as on a questionnaire, or on coding sheets prior to transfer. Alternatively, data can be input directly into a computer. It's vital to establish comprehensive guidelines for both coding and entry, especially when multiple individuals are involved or collaboration is necessary.

Numerous software options exist for data entry, including statistical, spreadsheet, and database programs. These tools typically allow data storage and offer exporting options in plain text or

ASCII formats compatible with popular statistical software like SAS, SPSS, or STATA. Many desktop versions of these programs are available, some offering student editions at more affordable prices, such as Student Stata and My stat.

Additionally, standalone products like Data Perfect can be tailored to mirror the data collection instrument's layout, streamlining the entry process and eliminating the need for a separate data entry matrix. These programs come with built-in safeguards to prevent errors, such as inputting alpha-numeric data into a numeric-only variable or exceeding the column limit for a specific variable.

20.10 NEED OF CODING IN SOCIAL SCIENCE RESEARCH

All research endeavours, whether in the sciences or social sciences, entail gathering data. Analyzing collected data requires interpretation, with coding emerging as a pivotal stage in this process. Coding entails the classification of data according to its origin, collection techniques, and the content it contains. Working with raw data, whether it's stacks of mailed questionnaires, statistical records spanning decades on annual suicides or family separations, or observations of classroom conduct in educational institutions, can be a daunting task. Thus, coding is employed to streamline the management of vast datasets through computational tools.

Based on the foregoing, it is evident that data coding involves the extraction of codes from observed data. In qualitative research, data is sourced from observations, interviews, or surveys. The primary objective of data coding is to illuminate the essence and significance of the insights provided by participants. Initially, coders derive initial codes from the observed data, which are then refined to generate more precise codes. Later, during data analysis, researchers assign values, percentages, or other numerical representations to these codes to derive meaningful conclusions. It's essential to emphasize that the purpose of data coding goes beyond merely reducing data volume; it aims to distill information meaningfully. Coders must ensure that no essential insights are overlooked during the coding process. Establishing a master chart, whether through Excel or manual means, serves as a foundational step in coding. This master chart is developed subsequent to the creation of a codebook, which can be generated using Excel, SPSS software, or manual techniques.

CHECK YOUR PROGRESS-I

Multiple Choice Questions

1. **The assignment of numbers to edited data is known as:**
 - a. editing
 - b. adjusting with a plug value
 - c. coding
 - d. all of the above

2. **A survey question asked respondent how much of the Super Bowl they watched by asking them to check one of the four following choices: “all of it,” “most of it,” “some of it,” or “none of it.” How many dummy variables would a researcher need to dummy code this question?**
 - a. one
 - b. two
 - c. three
 - d. four

3. **A collection of related fields that represents the responses from one sampling unit is known as a:**
 - a. file
 - b. record
 - c. code
 - d. label

4. **A researcher has assigned “1” to represent freshman, “2” for sophomore, “3” for junior, “4” for senior, and “5” for graduate student. These labels (i.e., freshman, sophomore, etc.) assigned to the numeric code are called:**
 - a. value labels

b. coding labels

c. cues

d. strings

20.11 LET US SUM UP

Thus, to conclude there are many processes involve for the preparing the date for analysis coding and editing are two of them.

20.12 GLOSSARY

- 1. Editing and Coding:** Editing involves reviewing collected data for errors, omissions, and inconsistencies, while coding assigns numerical or symbolic values to responses for efficient analysis.

20.13 SELF ASSESSMENT QUESTIONS

Q1. What is meant by coding.

Q2. Define editing.

20.14 LESSON END EXERCISE

- **MULTIPLE CHOICE QUESTIONS**

1. The unedited responses from a respondent exactly as indicated by that respondent are referred to as:

- a. codes
- b. files
- c. raw data
- d. strings

Ans: c

2. Kelsea is an interviewer and incorrectly entered respondents' choices on ten surveys. This type of error is called:

- a. nonrespondent error
- b. respondent error
- c. random error
- d. editing error

Ans: c

3. When a field interviewer records an impossible answer (e.g. birthdate: 1861), this means that the data need to be:

- a. edited
- b. transformed using a plug value
- c. coded
- d. deleted

Ans: a

20.15 ANSWERS TO CHECK YOUR PROGRESS

Answers: 1-C, 2-C, 3-B, 4-A

20.16 SUGGESTED READINGS

1. Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
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TABULATION

STRUCTURE

- 21.0 Learning Objectives**
- 21.1 Introduction**
- 21.2 Meaning and Objectives of Tabulation**
- 21.3 Steps in the preparation of table**
- 21.4 Types of Tabulation**
- 21.5 Methods of Tabulation**
- 21.6 Analysis of Data**
- 21.7 Let us sum up**
- 21.8 Glossary**
- 21.9 Self-Assessment Questions**
- 21.10 Lesson End Exercise**
- 21.11 Answer Key**
- 21.12 Suggested Readings**

21.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- Understand the meaning of tabulation.
- Discuss various steps used in the preparation of table.

- **Know various types of tabulation.**

21.1 INTRODUCTION

Tabulation is the process of summarizing raw data and displaying it in compact form for further analysis. Analysis of data is made possible through tables. Therefore, preparing tables is a very important step. Tabulation may be by hand, mechanical, or electronic. The choice is made largely on the basis of the size and type of study, alternative costs, time pressures, and the availability of computers and computer programmes. If the number of questionnaires is small, and their length short, hand tabulation is quite satisfactory.

Tables can be divided into: (i) Frequency tables, (ii) Response tables, (iii) Contingency table, (iv) Univariate table, (v) Bivariate tables, (vi) Statistical tables, and (vii) Time series tables.

21.2 MEANING AND OBJECTIVES OF TABULATION

MEANING

Tabulation is a systematic and logical representation of numeric data in rows and columns to facilitate comparison and statistical analysis. It facilitates comparison by bringing related information close to each other and helps in statistical analysis and interpretation.

In other words, the method of placing organised data into a tabular form is known as tabulation. It may be complex, double, or simple, depending upon the nature of categorisation.

OBJECTIVES OF TABULATION

(1) To simplify complex data

- It reduces the bulk of information, i.e., it reduces raw data in a simplified and meaningful form so that it can be easily interpreted by a common man in less time.

(2) To bring out essential features of data

- It brings out the chief/main characteristics of data.
- It presents facts clearly and precisely without textual explanation.

(3) To facilitate comparison

- The representation of data in rows and columns is helpful in simultaneous detailed comparison on the basis of several parameters.

(4) To facilitate statistical analysis

- Tables serve as the best source of organised data for statistical analysis.
- The task of computing average, dispersion, correlation, etc., becomes easier if data is presented in the form of a table.

(5) To save space

- A table presents facts in a better way than the textual form.
- It saves space without sacrificing the quality and quantity of data.

21.3 STEPS IN THE PREPARATION OF TABLE

Generally, a research table has the following parts: (a) table number, (b) title of the table, (c) caption, (d) stub (row heading), (e) body, (f) head note, (g) footnote. As a general rule, the following steps are necessary in the preparation of table:

- (i) Title of Table.** The table should be first given a brief, simple and clear title which may express the basis of classification.
- (ii) Columns and rows.** Each table should be prepared in just adequate number of columns and rows.
- (iii) Caption and Stubs.** The columns and rows should be given simple and clear captions and stubs.
- (iv) Ruling.** Columns and rows should be divided by means of thin or thick rulings.
- (v) Arrangement of Items.** Comparable figures should be arranged side by side.
- (vi) Derivations.** These should be arranged in the column near the original data so that their presence may easily be noted.
- (vii) Size of Columns.** This should be according to requirement.

- (viii) **Arrangement of Items.** This should be according to the problem.
- (ix) **Special Emphasis.** This can be done by writing important data in bold or special letters.
- (x) **Unit of measurement.** The unit should be noted below the line.
- (xi) **Approximation.** This should also be noted below the title.
- (xii) **Foot-notes.** These may be given below the table.
- (xiii) **Total.** Totals of each column and Grand total should be in one line.

It is not always necessary to represent facts in tabular form if they can be presented more simply in the body of the text. Tabular presentation enables the reader to follow quickly than textual presentation. Table should not merely repeat information covered in the text. The same information should not, of course, be presented in tabular form and graphical form. Smaller and simpler tables may be presented in the text while the large and complex table may be placed at the end of the chapter or report.

21.4 TYPES OF TABULATION

On the basis of construction, tables have been classified as follows:

- (a) **Simple Table.** This is made on the basis of just one quality or characteristics. Hence it is called one-way table. Examples of such tabulation are the classification of states on the basis of population, distribution of students on the basis of subjects of their study etc. An example of such table is as follows:

ONE-WAYTABLE

Marks Obtained	Number of Students	
(1)	(2)	
	0—10	—
	10—20	—
	20—30	—
	30—40	—
	40—50	—
	50—60	—
	60—70	—
	70—80	—
	Over 80	—
	Total	—

-
- (b) **Complex Table.** This is formed on the basis of more than one quality or characteristic — e.g. distribution of students on the basis of sex and marks obtained etc. If complex table is based on two qualities it is called a two-way table and if it is based on three qualities, it is named three-way table. If there are more than three qualities, it is called manifold-table. Following is an example of two-way table.

TWO-WAY TABLE

Marks Obtained	Number of Students		
	Male	Female	Total
(1)	(2)	(3)	(4)
0—20			
20—40			
40—60			
60—70			
70—80			
Over 80			
Total			

THREE-WAY TABLE
Distribution of Students in College According to Faculties.
Marks and Sex

Marks	Male			Female			Total		
	Arts	Science	Com- merce	Arts	Sci- enec	Com- merce	Arts	Sci- ence	Com- merce
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
0–20									
20–40									
40–60									
60–70									
70–80									
Over 80									
Total									

CHECK YOUR PROGRESS-I

• **MULTIPLE CHOICE QUESTIONS**

Question 1

What is the arrangement of data in rows and columns known as?

- (A) Frequency distribution
- (B) Cumulative frequency distribution
- (C) Tabulation
- (D) Classification

Answer: C

Question 2

When the quantitative and qualitative data are arranged according to a single feature, what is the tabulation known as?

- (A) One-way
- (B) Bivariate
- (C) Manifold division
- (D) Dichotomy

Answer: A

Question 3

Which function does the tabulation origin spot specify?

- (A) The list of integers
- (B) The list of maxterms
- (C) The list of minterms
- (D) None of the above

Answer: A

Question 4

What does the tabulation form exercise?

- (A) Gates
- (B) Demorgan's postulate
- (C) Matching process cycle
- (D) Venn diagram

Answer: C

21.5 METHODS OF TABULATION

- **Manual Tabulation.** If the survey has used a small sample and a limited number of cross tabulations, it is probably more efficient to tabulate manually than by machine.
- **Mechanical Tabulation.** In large studies with many cross tabulations of a two dimensional, three-dimensional, and four-dimensional nature, questionnaires must be prepared for machine tabulation.

Assuming that all classifications or categories have been considered, the next step is to lay out the plan for transferring answers to tabulating cards. One of the problems often faced is whether one or two cards will be necessary to record all the responses. Since errors do occur in this transferring procedure, it is necessary to establish some method for verification. Once cards have been created, they may be sorted and tabulated in any combination required.

- **Electronic Data Processing.** In many involved tabulations where a number of multiple correlations must be determined, it is sometimes more efficient to put survey data on a computer. However, this does not save money or time if the tabulations involve a “one shot” study. On the other hand, studies of a continuing nature, such as retail audits, are particularly amenable to electronic data processing.

Surveys that are an integral part of a forecasting procedure, either short range or long range, and that must be consistently revised as new input data are obtained can also be programmed efficiently on data processing machines.

In general, the criteria for choosing this method are the presence or absence of continuity, the need for complicated mathematical computation, and the cost of the original programme as well as its amortization over the period during which the research is being carried out. It is efficient to use the same programme as often as possible, because the major cost is in the development of the programme.

21.6 ANALYSIS OF DATA

Analysis of data means studying the tabulated material in order to determine inherent facts or meanings. It involves breaking down existing complex factors into simpler parts and putting the parts together in new arrangements for purposes of interpretation. A plan of analysis can and should be prepared in advance before the actual collection of material. A preliminary analysis on the selection plan should, as the investigation proceeds, develop into a complete, final analysis enlarged and reworked as and when necessary. This process requires flexible and open mind. No similarities, differences, trends and outstanding factors should go unnoticed. Larger divisions of material should be broken down into smaller units and rearranged in new combinations to discover new factors and relationships. Data should be studied from as many angles as possible to find out new and newer facts.

When the plan of analysis has not been made beforehand, there are four helpful modes to start with the analysis of data:

- (i) To think in terms of significant tables that the data permit.
- (ii) To examine carefully the statement of the problem and the earlier analysis and to study the original records of the data.
- (iii) To get away from the data and to think about the problem in layman's terms, or to actually discuss that problem with others.
- (iv) To attack the data by making various simple statistical calculations.

21.7 LET US SUM UP

Thus, Tabulation is analyzing data through tables. It is done by hand, mechanically or electronically. It has various types depend on the data.

21.8 GLOSSARY

1. **Tabulation:** It refers to the systematic organization of data into rows and columns within a table to facilitate analysis, comparison, and interpretation.
2. **Purpose:** Tabulation simplifies complex data, clarifies relationships between variables, and enables efficient comparison and statistical analysis.
3. **Process:** It involves arranging classified or grouped data into rows and columns, where rows typically represent observations and columns represent measured variables.
4. **Types:** Tabulation can be simple, double, or complex, depending on the number of characteristics being analyzed.

21.9 SELF ASSESSMENT QUESTIONS

Q1. What is meant by tabulation.

Q2. Discuss various steps used in the preparation of table.

21.10 LESSON END EXERCISE

❖ MULTIPLE CHOICE QUESTIONS

Question 1

What was the first tabulation method known as?

- (A) Quine-McCluskey
- (B) Cluskey
- (C) Mc Quine
- (D) None of the above

Question 2

What is the table where the variables are subdivided with interrelated features known as?

- (A) Order level table
- (B) Sub-parts of a table
- (C) One-way table
- (D) Two-way table

Question 3

In a tabular presentation, what is the summary and presentation of data with different non-overlapping classes defined as?

- (A) Frequency distribution
- (B) Chronological distribution

- (C) Ordinal distribution
- (D) Nominal distribution

Question 4

What are the general tables of data used to show data in an orderly manner known as?

- (A) Double characteristic tables
- (B) Manifold tables
- (C) Repository tables
- (D) Single characteristics tables

21.11 ANSWER KEY (LESSON END EXERCISE)

Answer: 1- D, 2- D, 3- A, 4- C

21.12 SUGGESTED READINGS

- Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
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INTERPRETATION OF DATA AND DRAWING INFERENCE

STRUCTURE

22.0 Learning Objectives

22.1 Introduction

22.2 Meaning

22.3 Forms of Interpretation

22.4 Essentials for Interpretation

22.5 Precautions in Interpretation

22.6 Comparison in Interpretation

22.7 Concluding remarks on Analysis and Interpretation

22.8 Let Us Sum Up

22.9 Glossary

22.10 Self-Assessment Questions

22.11 Lesson End Exercise

22.12 Answer Key

22.13 Suggested Readings

22.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- Understand the meaning and forms of interpretation.
- Know the essentials used for interpretation.
- Understand how one can make comparison in interpretation.

22.1 INTRODUCTION

Analysis and interpretation are central steps in the research process. The goal of analysis is to summarise the collected data in such a way that they provide answers to the questions that triggered the research. Interpretation is the search for the broader meaning of research findings. This search has two major aspects. First, there is the effort to establish continuity in social research through linking the results of one study with those of another. Secondly, interpretation leads to the establishment of explanatory concepts.

22.2 MEANING

Through interpretation, the meanings and implications of the study become clear. Analysis is not complete without interpretation, and interpretation cannot proceed without analysis. Birth, are thus, inter-dependent. In fact, interpretation can be conceived of as a part of analysis. It is the task of interpretation to find out a link or a position of the study in the whole analytical framework. It connects the findings with the established theories or the available stock of knowledge in a particular area of research. Although, chronologically, analysis and interpretation occupy the last stage of the research process, they occupy the first stage, since the necessary theoretical and practical knowledge of the future shape of the result is acquired much before the actual work is undertaken.

Jahada and Cook have defined it in the following words:

“Scientific interpretation seeks for relationship between the data of a study and between the study findings and other scientific knowledge.”

The interpretation of research data cannot be considered in the abstract. In view of the diversity of the research methods used in social sciences, and the corresponding diversity of the data they seek, the interpretation of such data is best considered within the context of each of the methods. The analysis and interpretation of historical data, for example, is best viewed in the light of the historical method, its objectives and its limitations. It is important to note in all circumstances that data do not interpret themselves and that it is the investigator who must pass judgment on their meaning from

the stand point of the problem under investigation.

An interpretation is by no means a mechanical process. It calls for a critical examination of the results of one's analysis in the light of all the limitations of his data-gathering. It is a very important step in the total procedure of research.

22.3 FORMS OF INTERPRETATION

It is an accepted creed that statistical data and information's may be interpreted in various forms depending on the size and nature of data and the need of its interpretation.

Some of the common and important forms or basis of interpretation may be described as:

- (i) **Relationship.** One of the most fundamental bases of interpretation is to find out the relationship. In general, it is seen that unless comparative analysis or study is made, true form of relationship between the subject and the object cannot be determined. On the contrary, unless true and proper relationship are established amongst 'different aspects', interpretation may never be considered as complete.
- (ii) **Proportion.** It is another aspect of making a study of interpretation perfect. Proportion is generally ascertained to determine the nature and form of absolute changes in the subjects of study. In particular, if the object of study is too much variable over a period, then proportions are ascertained to interpret the data or information's in a true form.
- (iii) **Percentages.** Sometimes the basis of interpretation is the percentage. If the object of enquiry is to determine the nature and extent of approximations only for a particular objective, then the method of percentage is often used for making interpretation as the basis. In this regard we must keep in mind that although the method of percentage is somewhat crude and 'approximate', yet it is often used in the sphere of absolute figures.
- (iv) **Averages or other measures of comparison.** Finally, the method of averages or other measures of comparisons are used to interpret statistical data and Information. It is a matter of common experience that if a long statistical table is to be analyzed and interpreted, we have to take the help of various forms of measuring the central or other tendencies relating to them. In the absence of these comparative measurements a definite and clear-cut result may not be arrived at. Therefore, averages or other measures of comparisons are considered to be not only desirable, but an essential and integral part of interpretation.

CHECK YOUR PROGRESS-I

Q1 What is meant by interpretation?

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Q2 Discuss any three forms of interpretation?

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22.4 ESSENTIALS FOR INTERPRETATION

Interpretation of all the collected data and information's are always possible. But if the aim is to interpret the given tables and information's in a perfect and desirable manner certain pre-conditions are to be satisfied. For, if all these essentials are not available in full, the object of interpretation and drawing inferences from the given tables many not is possible. Some of the pre-conditions or essentials of interpretation may be mentioned as—

(a) **Accurate Data.** One of the most important pre-requisites of interpretation and analysis is the availability of accurate and reliable data. For, in the absence of such material, the investigator fails to interpret the data in a proper and required form. Accuracy of data provides all the benefits of consistency and helps one to arrive at a true conclusion.

On the contrary, if the data is inaccurate, none can accept the validity of its value. Besides, such data proves to be a matter a great headache for the investigator to interpret it in a true manner. The obvious reason is that in such cases, the 'interpreter' can never be sure of his conclusions. He may arrive at correct or wrong conclusions and the possibility of landing on the wrong side is greater than the chances of having accurate conclusions. Hence, there is a need of having accurate data.

(b) **Sufficient Data.** Another important pre-requisite of accurate interpretation is the existence of sufficient and reliable data. The main reason of it is the basic truth that unless we have

sufficient data, we may never achieve the objectives of proper interpretation and analysis. Some of the rules and methods are applicable only if there is sufficient data. In the absence of it, not only the law of inertia or that of large numbers is not applicable, but the analysis or interpretation may also fail to yield the desired result.

Sometimes it so happens that a particular result (mostly wrong or unrepresentative) is achieved when interpretation is based on scanty or insufficient data. Biased or unrepresentative results may be obtained if inferences are drawn based on unreliable or insufficient data.

- (c) **Proper type of Classification and Tabulation.** For attaining the objective of accurate interpretation, in most of the cases, the investigators are required to base their calculations, estimations and judgments on data represented in a properly classified and tabulated form.

It is a well-known fact that if a set of data and information is analyzed taking into account faulty and defective type of classification or tabulation, there is every possibility of committing errors or of arriving at wrong conclusions. Therefore, every care is to be taken, as a pre-requisite, to base all types of interpretations on systematically classified and properly tabulated data and information's.

- (d) **Absence of Heterogeneous Data.** For a uniform and accurate result, the data must be homogenous. The reason is that if the data are non-homogeneous or heterogeneous, it may fail to yield the desired result. For, in such cases the application of statistical methods is not only impeded, but may even fail to mould it to the proper channel. We all know that 'representative result' is dependent on the availability of homogeneous data; and if the data is not of such a nature, the statistical treatment may give a false biased or an absurd result. Therefore, "it is suggested to all the investigators to base their calculations on homogeneous data alone".

What is true of all the statistical methods is also true in the case of interpretation and analysis. If the basis of interpretation is uniform, accurate and homogeneous data there is every possibility of attaining a better and representative result.

- (e) **Possibility of Statistical Treatment.** It is a matter of common belief that every data or information is not suited to statistical treatment. In particular, if the subject concerned is related to 'quality' or of the information available is scanty, they may not be regarded as 'suitable for statistical treatment'. Naturally, proper interpretations and statistical analysis are not possible in such cases.

So, while dealing with the important and useful aspect of interpretation and analysis, we have to keep a vigilant eye on the nature of enquiry as well as on availability of data conducive statistical treatment. If all these 'aspects' are satisfactory, there is no reason why there should

not be any possibility of treating the subject in a proper statistical way, or to use the information's gathered for drawing accurate and reliable statistical inferences.

- (f) **Consistency of Information's.** Inconsistent information's and data are always subject to inaccurate results. In mathematical and statistical treatment, however, emphasis is always laid on having stable and accurate results. Therefore, for having a better standard of interpretation and results, it is always desirable that all statistical treatment should be subjected to consistent data and information's.

In the absence of consistent data, the application of statistical method is not only difficult, but might give different results at different occasions. This type of 'lack of consistency' is always bad and every effort is required to be made to avoid all such causes and reasons that might drift the results away from accuracy. Inconsistent data, in general, yields inconsistent interpretations.

Thus, from all the above considerations we may conclude that it is very essential to have all the pre-requisites of interpretation in full to arrive at better conclusions.

Report for the research worker's own ideas and speculations. In the course of his work, he must inevitably develop theories and hunches, and so long as he makes clear that they are no more than this, it is a pity to omit publishing them with the results.

22.5 PRECAUTIONS IN INTERPRETATION

It is important to recognize that errors can be made in interpretation just as they can in any of the other steps of the scientific method and the specific errors to be guarded against vary with the different research methods. This step is almost purely subjective, and many errors are made at this point. If, however, one is careful and critical of his own thinking, he should be able to make satisfactory interpretation. The following are among the more common errors of interpretation which need to be avoided:

- (a) **Failure to see the problem in proper perspective.** Sometimes the investigator may have an inadequate grasp of the problem in its broad sense and too close a focus on its immediate aspect.
- (b) **Failure to appreciate the relevance of various elements.** The investigator may fail to see the relevance of the various elements of the situation due to an inadequate grasp of the problem, too rigid a mind-set or even a lack of imagination. This may cause the investigator to overlook the operation of significant factors. Consequently, the outcomes of the study are attributed to the wrong antecedent.

- (c) **Failure to recognize limitations in the research evidence.** These limitations may be of many types such as non-representativeness in sampling, bias in the data, inadequacies in the research design, defective data-gathering instruments and inaccurate statistical analysis.
- (d) **Misinterpretation due to unstudied factors.** A given result is composed of many factors; it is not produced simply by a single factor. The factors which condition any result are innumerable. In some instances, the interpretation is difficult or inconsistent with other results because one has conceived of his problem in too narrow sense. One's conclusions are always limited to the factors studied, and the cautious person will not draw generalizations which involve factors and conditions which he has only assumed.
- (e) **Ignoring selective factors.** In investigations where a selective group is made the subject of study (e.g. institutional delinquents) or where a selective factor is operating on the situations studied (year wise failure in a four-year course) one is likely to reach unwarranted conclusions if one ignores the selective factors.
- (f) **Difficulties of Interpretative Evaluation.** In studies of the descriptive nature- historical or normative survey-proper interpretation of data rests on proper evaluation of facts. Explanation of one's forms a usual part of the research undertaken, is fraught with the danger of misrepresentation. Factual interpretation and personal interpretation of their implications should never be confused. They should be kept apart in a research report.

22.6 COMPARISON IN INTERPRETATION

The element of comparison is fundamental to all research interpretations. Comparison of one's investigational findings with a criterion, with results of other comparable investigations, with normal or ideal conditions, with the judgment of a panel of judges or opinions of educational experts forms an important aspect of interpretative efforts of a researcher.

22.7 CONCLUDING REMARKS ON ANALYSIS AND INTERPRETATION

Thus, 'Interpretation' of research results is often no more than common sense reading of simple tables and explanation of simple descriptive measures. Where sample data are involved, this interpretation is set in the context of sampling errors, and where complicated relationships are concerned it may be quite intricate. But, whatever the nature of the data, the task of interpretation falls squarely on the shoulders of the researcher himself. Some research workers take the view that it is their job merely to present their results in logical and convenient form, leaving it to the readers to draw their own conclusions. For an enquiry like a population census this may be the only practicable course, but for the general run of surveys it seems entirely mistaken. Most readers of a research report, fellow-scientists or laymen, lack the time and perhaps the will-power to go through the tables and pick out

the crucial results. But, even if they had both, it would be wrong to leave the interpretation entirely to them. There is after all more to a piece of research than can be seen from the tables, and the researcher in interpreting his results is inevitably—and rightly—influenced by all that has gone before, by his acquaintance with the raw material behind the figures, and by his own judgment. While every reader is entitled to draw his own conclusions, the writer of the survey report neither should nor shirk the duty of giving his own.

Nor he need view his task too narrowly. The researcher who cautiously confines his conclusions to those strictly justified by the data may be safe from criticism, but he is not making his own full potential contribution. There is surely room in every research report for the research workers' own ideas and speculations. In the course of his work, he must inevitably develop theories and hunches, and, so, long as he makes clear that they are no more than this, it is a pity to omit publishing them with the results.

22.8 LET US SUM UP

The chief purposes for which research is conducted are: (1) to determine the status of phenomena, past and present; (2) to ascertain the nature, composition, and processes that characterize phenomena; (3) to trace growth, change and developmental history; and (4) to study cause-and-effect relationships.

For books and pamphlets, the order may be as under:

1. Name of author, last name first.
2. Title, underlined to indicate italics.
3. Place, publisher, and date of publication.
4. Number of volumes.

Example

Kothari, C.R., Quantitative Techniques, New Delhi, Vikas Publishing House Pvt. Ltd., 1978.

For magazines and newspapers, the order may be under:

1. **Name of the author, last name first.**
2. **Title of article, in quotation marks.**

3. **Name of periodical, underlined to indicate italics.**
4. **The volume or volume and number.**
5. **The date of the issue.**
6. **The pagination.**

Example

Robert V. Roosa, “Coping with Short-term International Money Flows”, the Barber, London, September, 1971, p. 995.

The above examples are just the samples for bibliography entries and may be used, but one should also remember that they are not the only acceptable forms. The only thing important is that, whatever method one selects, it must remain consistent.

Writing the final draft:

This constitutes the last step. The final draft should be written in a concise and objective style and in simple language, avoiding vague expressions such as “it seems”, “there may be” and the like ones. While writing the final draft, the researcher must avoid abstract terminology and technical jargon. Illustrations and examples based on common experiences must be incorporated in the final draft as they happen to be most effective in communicating the research findings to others. A research report should not be dull, but must enthuse people and maintain interest and must show originality. It must be remembered that every report should be an attempt to solve some intellectual problem and must contribute to the solution of a problem and must add to the knowledge of both the researcher and the reader.

Layout of the Research Report

Anybody, who is reading the research report, must necessarily be conveyed enough about the study so that he can place it in its general scientific context, judge the adequacy of its methods and thus form an opinion of how seriously the findings are to be taken. For this purpose, there is the need of proper layout of the report. The layout of the report means as to what the research report should contain. A comprehensive layout of the research report should comprise (A) preliminary pages; (B) The main text; and (C) the end matter. Let us deal with them separately.

(A) Preliminary Pages

In its preliminary pages the report should carry a title and data, followed by acknowledgement in the form of ‘Preface’ or Foreword’. Then there should be a table of contents followed by list of

tables and illustrations so that the decision-maker or anybody interested in reading in report can easily locate the required information in the report.

(B) Main Text

The main text provides the complete outline of the research report along with all details. Title of the research study is repeated at the top of the first page of the main text and then follows the other details on pages numbered consecutively, beginning with the second page. Each main section of the report should begin on a new page. The main text of the report should have the following sections; (i) Introduction; (ii) Statement of findings and recommendations; (iii) The results; (iv) The implications drawn from the results; and (v) The summary.

- (i) Introduction:** The purpose of introduction is to introduce the research project to the readers. It should contain a clear statement of the objectives of research i.e.; enough background should be given to make clear to the reader why the problem was considered worth investigating. A brief summary of other relevant research may also be stated so that the present study can be seen in that context. The hypotheses of study, if any, and the definitions of the major concepts employed in the study should be explicitly stated in the introduction of the report.

The methodology adopted in conducting the study must be fully explained. The scientific reader would like to know in detail about such thing; how was the study carried out? What was its basic design?

? If the study was an experimental one, then what were the experimental manipulations? If the data were collected by means of questionnaires or interviews, then exactly what questions were asked (The questionnaire or interview schedule is usually given in an appendix) ? If measurements were based on observation, then what instructions were given to the observers? Regarding the sample used in the study the reader should be told; who were the subjects? How many were there? How were they selected?

All these questions are crucial for estimating the probable limits of generalizability of the findings. The statistical analysis adopted must also be clearly stated. In addition to all this, the scope of the study should be stated and the boundary lines be demarcated. The various limitations, under which the research project was completed, must also be narrated.

- (ii) Statement of findings and recommendations:** After introduction, the research report must contain a statement of findings and recommendations in non-technical language so that it can be easily understood by all concerned. If the findings happen to be extensive, at this point they should be put in the summarized form.

- (iii) Results:** A detailed presentation of the findings of the study, with supporting data in the

form of tables and charts together with a validation of results, is the next step in writing the main text of the report. This generally comprises the main body of the report, extending over several chapters. The result section of the report should contain statistical summaries and reductions of the data rather than the raw data. All the results should be presented in logical sequence and splitted into readily identifiable sections. All relevant results must find a place in the report. But how one is to decide about what is relevant is the basic question. Quite often guidance comes primarily from the research problem and from the hypotheses, if any, with which the study was concerned. But ultimately the researcher must rely on his own judgment in deciding the outline of his report. “Nevertheless, it is still necessary that the states clearly the problem with which he was concerned, the procedure by which he worked on the problem, the conclusions at which he arrived, and the bases for the conclusions.”

(iv) **Implications of the results:** Toward the end of the main text, the researcher should again put down the results of his research clearly and precisely. He should state the implications that flow from the result of the study, for the general reader is interested in the implications for understanding the human behaviour. Such implications may have three aspects as stated below:

- (a) A statement of the inferences drawn from the present study which may be expected to apply in similar circumstances.
- (b) The conditions of the present study which may limit the extent of legitimate generalizations of the inferences drawn from the study.
- (c) The relevant questions that still remain unanswered or new questions raised by the study along with suggestions for the kind of research that would provide answers for them.

It is considered a good practice to finish the report with a short conclusion which summarizes and recapitulates the main points of the study. The conclusion drawn from the study should be clearly related to the hypotheses that were stated in the introductory section. At the same time, a forecast of the probable future of the subject and an indication of the kind of research which needs to be done in that particular field is useful and desirable.

(v) **Summary:** It has become customary to conclude the research report with a very brief summary, resting in brief the research problem, the methodology, the major findings and the major conclusions drawn from the research results.

(C) **End matter Summary**

At the end of the report appendices should be enlisted in respect of all technical data such as questionnaires, sample information, mathematical derivations and the like ones. Bibliography

of sources consulted should also be given. Index (an alphabetical listing of names, place and topics along with the numbers of the pages in a book or report on which they are mentioned or discussed) should invariably be given at the end of the report. The value of index lies in the fact that it works as a guide to the reader for the contents in the report.

Types of Reports

Research reports vary greatly in length and type. In each individual case, both the length and the form are largely dictated by the problems at hand. For instance, business firms prefer reports in the letter form, just one or two pages in length. Banks, insurance organizations and financial institutions are generally fond of the short balance-sheet type of tabulation for their annual reports to their customers and shareholders. Mathematicians prefer to write the results of their investigations in the form of algebraic notations. Chemists report their results in symbols and formulae. Students of literature usually write long reports presenting the critical analysis of some work or period or the like with a liberal use of quotations from the works of the author under discussion. In the field of education and psychology, the favourite form is the report on the results of experimentation accompanied by the detailed statistical tabulations. Clinical psychologists and social pathologists frequently find it necessary to make use of the case-history form.

News items in the daily papers are also forms of report writing. They represent first hand on-the-scene accounts of the events described or compilations of interviews with persons who were on the scene. In such report the first paragraph usually contains the important information in detail and the succeeding paragraphs contain material which is progressively less and less important.

Book-reviews which analyze the content of the book and report on the author's intentions, his success or failure in achieving his aims, his language, his style. Scholarship, bias or his point of view. Such reviews also happen to be a kind of short report. The reports prepared by governmental bureaus, special commissions, and similar other organizations are generally very comprehensive.

22.9 GLOSSARY

1. **Interpretation:** It is the process of explaining the meaning of data, often by connecting it to broader contexts, theories, or research findings.
2. **Inference:** It is the process of drawing conclusions or making predictions based on the interpretation of data.
3. **Data interpretation and drawing inferences:** These are crucial processes in understanding

and making sense of information. Interpretation involves explaining the meaning of data, while inference is the act of reaching conclusions based on that interpretation. Essentially, you interpret data to draw inferences that lead to informed decisions or further investigation.

4. **Inductive inference:** The logical process of making broad generalizations from specific observations, which is a core part of drawing inferences from a sample to a population.
5. **Representative Sample:** A sample that accurately reflects the characteristics of the population it is drawn from is crucial for the inferences made to be reliable.
6. **Triangulation:** The use of multiple methods in a study to cross-reference findings and produce a more robust and valid conclusion or inference.
7. **Sampling Error:** The difference between a sample statistic and the corresponding population parameter, which is an inherent part of statistical inference.
8. **Reliability:** A measure of a research result's consistency or verifiability, which is a key component of valid inferences.

22.10 SELF ASSESSMENT QUESTIONS

Q1. What are the precautions taken during interpretation.

Q2. Discuss various forms of interpretation.

Q3. What are the different essentials for interpretation.

22.11 LESSON END EXERCISE

✚ Give the suitable answers of the questions given below:

1. **Question:** _____ refers to inferring about the whole population based on the observations made on a small part.

- a) Pseudo-inference
- b) Objective inference
- c) Inductive inference
- d) Deductive inference

2. **Question:** The most important criterion of a good sample, which allows for accurate inferences, is its _____.

- a) Size
- b) Representativeness
- c) Cost-effectiveness
- d) Ease of collection

3. **Question:** Effectiveness of research increases if multiple methods are used, as this helps in relating information from different sources to arrive at a meaningful inference. This process is called:

- a) Deduction
- b) Replication
- c) Triangulation

d) Standardization

22.12 ANSWER KEY (LESSON END EXERCISE)

Answer: 1-C, 2- B, 3-C

22.13 SUGGESTED READINGS

- Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
- Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.
- Russell, Ackoff, *Design of Social Research*, University of Chicago Press, Chicago, 196.

BIBLIOGRAPHY

STRUCTURE

- 23.0 Learning Objectives**
- 23.1 Introduction**
- 23.2 Appendices**
- 23.3 Types**
- 23.4 Synopsis/Abstract**
- 23.5 Index**
- 23.6 Let us sum up**
- 23.7 Glossary**
- 23.8 Self-Assessment Questions**
- 23.9 Lesson End Exercise**
- 23.10 Answer Key**
- 23.11 Suggested Readings**

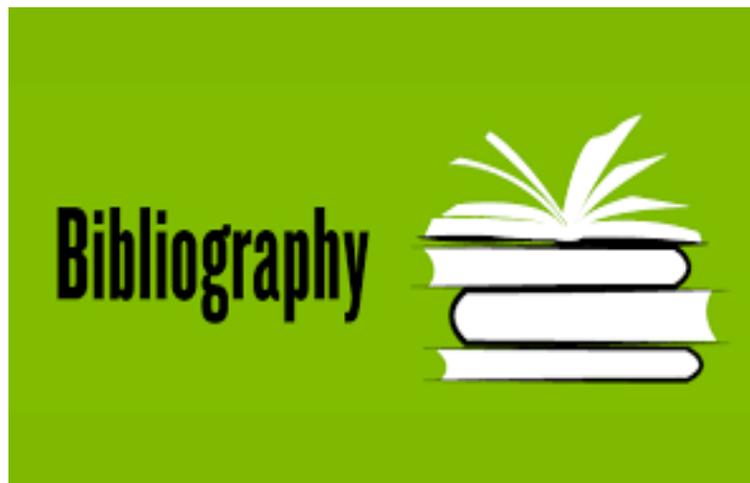
23.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to:

- **Know the meaning of index.**

- **Understand the appendices.**

23.1 INTRODUCTION



A bibliography means book list i.e., a list of written sources, either published or unpublished, consulted in the preparation of the report during the course of research, Books, periodical articles, government documents, unpublished materials, pamphlet, films, radio or television broadcasts, records, lectures, interviews, etc., Bibliography may refer to all the document which have bearing on the dissertation/thesis irrespective of their being actually referred to or not, in the text. The aim is to permit the reader to find the exact item you consulted, consequently, there is a standard form.

There are several kinds of bibliography.

- References or Literature cited** comprises a list of documents which is confined only to those works actually cited in the text or the footnotes of the report.
- Sources consulted** consist of a comprehensive listing of books and papers consulted including those which are not strictly relevant to the subject of the thesis.
- Selected Bibliography** contains those sources cited, together with the more relevant of the works which have been consulted.

(d) **Bibliographical Notes** is a brief annotated bibliography where the references are combined with the bibliography list. A typical 'Bibliographical Notes' system will bear consecutive Arabic numerals. There might be divided and numbered in separate series according to the respective chapters to which they belong.

Bibliography may be arranged according to the alphabetical order, chronological order, divisions of the subject, kinds of works listed, etc., Generally, the simplest and best arrangement for a short bibliography is the alphabetical order of the author's last names i.e., the title are arranged alphabetically by surnames. Some lists of books are most convenient if arranged in the chronological order of the publication. The chronological order is especially appropriate whenever a historical or development plan prevails. Works on history for example, might be classified according to countries. Works on education might be divided according the various levels such as elementary, secondary higher secondary, and higher education. Writers sometimes desire to make separate divisions for primary sources and secondary sources, for books and periodicals, for signed and unsigned works. Current practice favours one comprehensive listing-not a division into primary sources and secondary sources or books, journals, newspapers, documents and official papers and manuscripts, although in an historical study such an ordering may be required.

The bibliography is preceded by a sheet containing the word BIBLIOGRAPHY, capitalized and centered on the page. References are arranged in alphabetical order, the last name (surname) of the author listed first, separated from the full given name (if known) and followed by a period. The surname starts flush with the left margin of the page and subsequent lines are single spaced and intended five spaces. Double spacing separates entries. The annotating statement should be single-spaced but separated from the bibliography entry by a double space. If no author name is given, the name of the publication or the sponsoring organisation is listed as the author. Where more than one work by the same author is cited, it is usual to type a line or a series of eight consecutive dashes⁴ in the place of the author's name, viz ... instead of his name in the second and subsequent entries. Such a procedure is not recommended but repetition of the author's name for each reference by the same author will add clarity to the bibliography.

1. George Shelton Hubbell op. cit. p. 100
2. Jonathan Anderson, et. al Op. Cit. p. 95
3. Parsons C.J. Op. cit. p 74
4. Gordon Coggins Op. cit. p. 39
5. Jonathan Anderson. op. cit. p. 99

The title of books and journals should be underlined and followed by a period. No underlining used for title of articles, essays and unpublished works. If there are any other facts essential to identification of an entry, such as editor, edition, number in a series or translation, they should come immediately after the title with each item followed by a period.

All works by a single author precede those works in which he is the senior co- author. If the names and order of authors are exactly the same for two or more publications, the order in the bibliography is determined by the date of each publication. The data used should be the one found on the title page of the publication and should be followed by a period. If no date is given on the title page, the copy right date should be given. As to place of publication, where several places/countries are given the first one will be cited. The items in a bibliography need not be numbered unless the numbering serves some purpose, e.g. references used in the place of footnotes, to the bibliography in the text by numbers.

CHECK YOUR PROGRESS-I

Q1 Discuss any two forms of bibliography?

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Q2. What is the use of bibliography in social research?

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23.2 APPENDICES

An appendix or appendices is used for additional or supplementary materials which has not found place in the main text. Here should be included complex or master tables original data schedules questionnaires and interview forms, copies or cover letters used in the study, documents and long explanatory notes to the text, instructions to field workers, statistical tests and any other material evidence of considerable reference value.

By relegating such supporting evidence to an appendix, the text of the report remains uncluttered yet the argument is not weakened because the interested reader can be directed to consult particular pages of an appendix for further detail. Thus, such of those materials given in appendices (s) are not directly essential to an understanding of the text but useful as supporting evidence only.

Appendices may be placed between the final chapter and the bibliography or immediately after the bibliography; it is largely left to the discretion of the writer. All appendices should be separated and listed accordingly in the Table of Contents together with page numbers. Each appendix should be referred to in the body of the thesis. This may be done by reference to in the text itself or by footnote and should occur at the earliest point in the thesis where the material appended is pertinent to the discussion/ reference.

The appendix is preceded by a sheet containing the APPENDICE (S). Capitalised and centred on the page. Each appendice should have a suitable caption. If more than one appendix is necessary or if the appendices is divided into sections, each part should be designated by a capital letter e.g., APPENDIX-A, APPENDIX- B etc. rather than a number. Pages are numbered surgically using Arabic numerals.

23.3 TYPES

1.Enumerative/Systematic Bibliography: This is the most common type used in academic papers. It acts as a list of books, articles, and other sources organized by specific criteria, such as alphabetically by author or by subject. It provides only the necessary citation information, such as author, title, and publication date.

2.Annotated Bibliography: This type provides a list of sources, but each citation is followed by a short, descriptive, and evaluative paragraph (annotation). These annotations, typically around 150 words, summarize the source's content and explain its relevance, credibility, or usefulness to a research project.

3.Other Types: Other specialized types include analytical (examining physical aspects of books) and descriptive (detailed, formal description of books) bibliographies.

23.4 SYNOPSIS / ABSTRACT

In several institutions an abstract or synopsis of the thesis may be required. A synopsis should not be too long and in some institutions the limit either in the number of words or pages are stipulated. It is also attached to the thesis. In such cases, it should be drafted keeping in mind the following points:

- (a) a short statement of the problem;
- (b) a brief description explaining the methodology and procedures used in collection the data; and
- (c) a condensed summary of the findings of the study.

One authority state:

In the synopsis, emphasis should be placed on result usually of the last two- thirds to three-fourths of the synopsis is devoted to the findings or result of the investigation. The remaining fourth or third, usually at the beginning contains a succinct statement of purpose, possible because of lack of proportion, caused by over emphasis of minor points or too scanty treatment of important conclusions. The style of writing places a premium on directness, conciseness, and condensation.

23.5 INDEX

Index may be either subject index or author index. An Index of the either type is not included in graduate/postgraduate student's research reports. However, if the report is being prepared for publication and index is a technical manuscript or is intended as a work of reference, and index is desirable.

The index, if prepared, should give an alphabetically arranged, detailed reference to all important matters discussed in the report, such as names of persons (if separate author index is not prepared), places, events, definitions, concepts and vital statement. The researcher, therefore, should study the indexes of other research reports published in the field and acquaint himself with the basics of the technique of index-making.

23.6 LET US SUM UP

Thus, to summarize bibliography may refer to all the document which have bearing dissertation/thesis irrespective of their being actually referred to or not, in the text.

23.7 GLOSSARY

1. Bibliography: A bibliography in research is a list of all sources, such as books, articles, and websites, that were used or consulted during the research process. It is typically found at the end of a research paper, thesis, or book and serves to acknowledge the work of others and provide readers with the information needed to locate the sources.

23.8 SELF ASSESSMENT QUESTIONS

Q1. What is meant by the term bibliography.

Q2. Define Index.

23.9 LESSON END EXERCISE

❖ MULTIPLE CHOICE QUESTIONS

Q1. Bibliography means

- A. Foot Note
- B. Quotations
- C. List of Books referred
- D. Biography

Q2. Which of the following is a common citation style used in the social sciences?

- A) Chicago style
- B) APA style
- C) MLA style
- D) Harvard style

Q3. What is the primary purpose of a bibliography at the end of a research report?

- A) To show the researcher's personality
- B) To confuse the reader with complex citations
- C) To help others who are interested in the topic find more information
- D) To make the report look longer

Q4. What does the Latin abbreviation "ibid." mean?

- A) "In the place cited"
- B) "In the work cited"
- C) "In the same place"
- D) "According to the author"

23.10 ANSWER KEY (LESSON END EXERCISE)

Answer: 1-C, 2-B, 3-C, 4-C

23.11 SUGGESTED READINGS

- Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
- Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.

REPORT WRITING

STRUCTURE

- 24.0 Learning Objectives**
- 24.1 Introduction**
- 24.2 Different Steps in Writing Reports**
- 24.3 Interpretation and Report Writing**
- 24.4 Types of Reports**
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24.0 LEARNING OBJECTIVES

Dear learner, after going through this lesson you will be able to: -

- Understand different steps in writing report.
- Know the meaning of oral presentation
- Understand about the various precaution used for writing research reports

24.1 INTRODUCTION



Research report is considered a major component of the research study for the research task remains incomplete till the report has been presented and/or written. As a matter of fact, even the most brilliant hypothesis, highly well designed and conducted research study, and the most striking generalizations and findings are of little value unless they are effectively communicated to others. The purpose of research is not well served unless the findings are made known to others. Research results must invariably enter the general store of knowledge. All this explains the significance of writing research report. There are people who do not consider writing of report as an integral part of the research process. But the general opinion is in favour of treating the presentation of research results or the writing of report as part and parcel of the research project. Writing of report is the last step in a research study and requires a set of skills somewhat different from those called for in respect of the earlier stages of research. This task should be accomplished by the researcher with utmost care; he may seek the assistance and guidance of experts for the purpose.

24.2 DIFFERENT STEPS IN WRITING REPORT

Research reports are the product of slow, painstaking, accurate inductive work. The usual steps involved in writing report are: (a) logical analysis of the subject- matter; (b) preparation of the final outline; (c) preparation of the rough draft; (d) rewriting and polishing; (e) preparation of the final bibliography; and (f) writing the final draft. Though all these steps are self-explanatory, yet a brief mention of each one of these will be appropriate for better understanding.

- a) **Logical analysis of the subject matter:** It is the first step which is primarily concerned with the development of a subject. There are two ways in which to develop a subject — (a) logically and (b) chronologically. The logical development is made on the basis of mental connections and associations between the one thing and another by means of analysis. Logical treatment often consists in developing the material from the simple possible to the most complex structures. Chronological development is based on a connection or sequence in time or occurrence. The directions for doing or making something usually follow the chronological order.
- b) **Preparation of the final outline:** It is the next step in writing the research report. “Outlines are the framework upon which long written works are constructed. They are an aid to the logical organization of the material and a reminder of the points to be stressed in the report.
- c) **Preparation of the rough draft:** This follows the logical analysis of the subject and the preparation of the final outline. Such a step is of utmost importance for the researcher now sits to write down what he has done in the context of his research study. He will write down the procedure adopted by him in collecting the material for his study along with various limitations faced by him, the technique of analysis adopted by him, the broad findings and generalizations and the various suggestions he wants to offer regarding the problem concerned.
- d) **Re-writing and polishing of the rough draft:** This step happens to be most difficult part of all formal writing. Usually, this step requires more time than the writing of the rough draft. The careful revision makes the difference between a mediocre and a good piece of writing. While rewriting and polishing, one should check the report for weaknesses in logical development or presentation. The researcher should also “see whether or not the material, as it is presented, has unity and cohesion; does the report stand upright and firm and exhibit a definite pattern, like a marble arch? Or does it resemble an old wall of moldering cement and loose bricks. In addition, the researcher should give due attention to the fact that in his rough draft he has been consistent or not. He should check the mechanics of writing—grammar, spelling and

usage.

- e) **Preparation of the final bibliography:** Next in order comes the task of the preparation of the final bibliography. The bibliography, which is generally appended to the research report, is a list of books in some way pertinent to the research which has been done. It should contain all those works which the research has consulted. The bibliography should be arranged alphabetically and may be divided into two parts; the first part may contain the names of books and pamphlets, and the second part may contain the names of magazine and newspaper articles. Generally, this pattern of bibliography is considered convenient and satisfactory from the point of view of reader, though it is not the only way of presenting bibliography. The entries in bibliography should be made adopting the following order:

For books and pamphlets, the order may be as under:

1. Name of author, last name first.
2. Title, underlined to indicate italics.
3. Place, publisher, and date of publication.
4. Number of volumes.

Example

Kothari, C. R., Quantitative Techniques, New Delhi, Vikas Publishing House Pvt. Ltd., 1978.

For magazines and newspapers, the order may be as under:

1. Name of the author, last name first.
2. Title of article, in quotation marks.
3. Name of periodical, underlined to indicate italics.
4. The volume or volume and number.
5. The date of the issue.
6. The pagination.

Example

Rebert V. Roosa, "Coping with Short-term International Money Flows", the Banker, London,

September, 1971, p. 995.

The above examples are just the samples for bibliography entries and may be used, but one should also remember that they are not the only acceptable forms. The only thing important is that, whatever method one selects, it must remain consistent.

- f) **Writing the final draft:** This constitutes the last step. The final draft should be written in a concise and objective style and in simple language, avoiding vague expressions such as “it seems”, “there may be”, and the like ones. While writing the final draft, the researcher must avoid abstract terminology and technical jargon. Illustrations and examples based on common experiences must be incorporated in the final draft as they happen to be most effective in communicating the research findings to others. A research report should not be dull, but must enthuse people and maintain interest and must show originality. It must be remembered that every report should be an attempt to solve some intellectual problem and must contribute to the solution of a problem and must add to the knowledge of both the researcher and the reader.

CHECK YOUR PROGRESS-I

❖ **MULTIPLE CHOICE QUESTIONS**

1. What is the primary purpose of report writing?

- a. Entertainment
- b. Information dissemination
- c. Creative expression
- d. Opinion sharing

Answer: b

2. In report writing, what should be included in the introduction?

- a. Personal anecdotes
- b. Main findings and purpose
- c. Detailed analysis
- d. Quotes from famous authors

Answer: b

3. What tense is commonly used in report writing?

- a. Past tense
- b. Present tense
- c. Future tense
- d. Continuous tense

Answer: a

4. Which section of a report provides a brief overview of the entire document?

- a. Conclusion
- b. Recommendations
- c. Executive summary
- d. Introduction

Answer: c

5. What is the role of visuals (charts, graphs) in a report?

- a. Decorative elements
- b. To confuse the reader
- c. To enhance clarity and understanding
- d. Unnecessary additions

Answer: c

6. How should recommendations be presented in a report?

- a. In a separate document
- b. Randomly throughout the report
- c. Clearly and logically, often in a numbered list
- d. As a summary in the introduction

Answer: c

7. What is the purpose of the methodology section in a report?

- a. To present key findings
- b. To showcase personal opinions
- c. To explain the research process
- d. To list recommendations

Answer: d

8. When structuring a report, what comes after the introduction?

- a. Executive summary
- b. Conclusion
- c. Recommendations
- d. Findings

Answer: d

9. In academic report writing, which referencing style is commonly used?

- a. MLA
- b. APA
- c. Chicago
- d. Harvard

Answer: b

10. What is the typical length of a conclusion in a report?

- a. Longer than the introduction
- b. One or two sentences
- c. About the same as the introduction
- d. Irrelevant to the report length

Answer: c

24.3 INTERPRETATION AND REPORT WRITING

Layout of the Research Report

Anybody, who is reading the research report, must necessarily be conveyed enough about the study so that he can place it in its general scientific context, judge the adequacy of its methods and thus form an opinion of how seriously the findings are to be taken. For this purpose, there is the need of proper layout of the report. The layout of the report means as to what the research report should contain. A comprehensive layout of the research report should comprise (A) preliminary pages; (B) the main text; and (C) the end matter. Let us deal with them separately.

(A) Preliminary Pages

In its preliminary pages the report should carry a title and date, followed by acknowledgements in the form of 'Preface' or 'Foreword'. Then there should be a table of contents followed by list of tables and illustrations so that the decision-maker or anybody interested in reading the report can easily locate the required information in the report.

(B) Main Text

The main text provides the complete outline of the research report along with all details. Title of the research study is repeated at the top of the first page of the main text and then follows the other details on pages numbered consecutively, beginning with the second page. Each main section of the report should begin on a new page. The main text of the report should have the following sections: (i) Introduction; (ii) Statement of findings and recommendations; (iii) The results; (iv) The implications drawn from the results; and (v) The summary.

(i) Introduction: The purpose of introduction is to introduce the research project to the readers. It should contain a clear statement of the objectives of research i.e.; enough background should be given to make clear to the reader why the problem was considered worth investigating. A brief summary of other relevant research may also be stated so that the present study can be seen in that context. The hypotheses of study, if any, and the definitions of the major concepts employed in the study should be explicitly stated in the introduction of the report.

The methodology adopted in conducting the study must be fully explained. The scientific reader would like to know in detail about such thing: How was the study carried out? What was its basic design? If the study was an experimental one, then what were the experimental manipulations? If the data were collected by means of questionnaires or interviews, then exactly what questions were asked (The questionnaire or interview schedule is usually given in an appendix)? If measurements were based on observation, then what instructions were given to the observers? Regarding the sample used in the study the

reader should be told: Who were the subjects? How many were there? How were they selected? All these questions are crucial for estimating the probable limits of generalizability of the findings. The statistical analysis adopted must also be clearly stated. In addition to all this, the scope of the study should be stated and the boundary lines be demarcated. The various limitations, under which the research project was completed, must also be narrated.

- (ii) **Statement of findings and recommendations:** After introduction, the research report must contain a statement of findings and recommendations in non-technical language so that it can be easily understood by all concerned. If the findings happen to be extensive, at this point they should be put in the summarized form.
- (iii) **Results:** A detailed presentation of the findings of the study, with supporting data in the form of tables and charts together with a validation of results, is the next step in writing the main text of the report. This generally comprises the main body of the report, extending over several chapters. The result section of the report should contain statistical summaries and reductions of the data rather than the raw data. All the results should be presented in logical sequence and splitted into readily identifiable sections. All relevant results must find a place in the report. But how one is to decide about what is relevant is the basic question. Quite often guidance comes primarily from the research problem and from the hypotheses, if any, with which the study was concerned. But ultimately the researcher must rely on his own judgment in deciding the outline of his report. “Nevertheless, it is still necessary that he states clearly the problem with which he was concerned, the procedure by which he worked on the problem, the conclusions at which he arrived, and the bases for his conclusions.”
- (iv) **Implications of the results:** Toward the end of the main text, the researcher should again put down the results of his research clearly and precisely. He should state the implications that flow from the results of the study, for the general reader is interested in the implications for understanding the human behaviour. Such implications may have three aspects as stated below:
 - (a) A statement of the inferences drawn from the present study which may be expected to apply in similar circumstances.
 - (b) The conditions of the present study which may limit the extent of legitimate generalizations of the inferences drawn from the study.

- (c) The relevant questions that still remain unanswered or new questions raised by the study along with suggestions for the kind of research that would provide answers for them.

It is considered a good practice to finish the report with a short conclusion which summarizes and recapitulates the main points of the study. The conclusion drawn from the study should be clearly related to the hypotheses that were stated in the introductory section. At the same time, forecast of the probable future of the subject and an indication of the kind of research which needs to be done in that particular field is useful and desirable.

- (v) **Summary:** It has become customary to conclude the research report with a very brief summary, resting in brief the research problem, the methodology, the major findings and the major conclusions drawn from the research results.

(C) End Matter

At the end of the report, appendices should be enlisted in respect of all technical data such as questionnaires, sample information, mathematical derivations and the like ones. Bibliography of sources consulted should also be given. Index (an alphabetical listing of names, places and topics along with the numbers of the pages in a book or report on which they are mentioned or discussed) should invariably be given at the end of the report. The value of index lies in the fact that it works as a guide to the reader for the contents in the report.

24.4 TYPES OF REPORTS

Research reports vary greatly in length and type. In each individual case, both the length and the form are largely dictated by the problems at hand. For instance, business firms prefer reports in the letter form, just one or two pages in length. Banks, insurance organizations and financial institutions are generally fond of the short balance-sheet type of tabulation for their annual reports to their customers and shareholders. Mathematicians prefer to write the results of their investigations in the form of algebraic notations. Chemists report their results in symbols and formulae. Students of literature usually write long reports presenting the critical analysis of some writer or period or the like with a liberal use of quotations from the works of the author under discussion. In the field of education and psychology, the favourite form is the report on the results of experimentation accompanied by the detailed statistical tabulations. Clinical psychologists and social pathologists frequently find it necessary to make use of the case history form.

News items in the daily papers are also forms of report writing. They represent firsthand on-the scene accounts of the events described or compilations of interviews with persons who were on the scene. In such reports the first paragraph usually contains the important information in detail and the succeeding paragraphs contain material which is progressively less and less important.

Book-reviews which analyze the content of the book and report on the author's intentions, his success or failure in achieving his aims, his language, his style, scholarship, bias or his point of view. Such reviews also happen to be a kind of short report. The reports prepared by governmental bureaus, special commissions, and similar other organizations are generally very comprehensive reports on the issues involved. Such reports are usually considered as important research products. Similarly, Ph.D. these and dissertations are also a form of report-writing, usually completed by students in academic institutions.

The above narration throws light on the fact that the results of a research investigation can be presented in a number of ways viz., a technical report, a popular report, an article, a monograph or at times even in the form of oral presentation. Which method (s) of presentation to be used in a particular study depends on the circumstances under which the study arose and the nature of the results. A technical report is used whenever a full written report of the study is required whether for record-keeping or for public dissemination. A popular report is used if the research results have policy implications. We give below a few details about the said two types of reports:

(A) Technical Report

In the technical report the main emphasis is on (i) the methods employed (ii) assumptions made in the course of the study (iii) the detailed presentation of the findings including their limitations and supporting data.

A general outline of a technical report can be as follows:

- 1. Summary of results:** A brief review of the main findings just in two or three pages.
- 2. Nature of the study:** Description of the general objectives of study, formulation of the problem in operational terms, the working hypothesis, the type of analysis and data required, etc.
- 3. Methods employed:** Specific methods used in the study and their limitations. For instance, in sampling studies we should give details of sample design viz., sample size sample selection, etc.
- 4. Data:** Discussion of data collected their sources, characteristics and limitations. If secondary

data are used, their suitability to the problem at hand be fully assessed. In case of a survey, the manner in which data were collected should be fully described.

5. **Analysis of data and presentation of findings:** The analysis of data and presentation of the findings of the study with supporting data in the form of tables and charts be fully narrated. This, in fact, happens to be the main body of the report usually extending over several chapters.
6. **Conclusions:** A detailed summary of the findings and the policy implications drawn from the results be explained.
7. **Bibliography:** Bibliography of various sources consulted be prepared and attached.
8. **Technical appendices:** Appendices be given for all technical matters relating to questionnaire, mathematical derivations, elaboration on particular technique of analysis and the like ones.
9. **Index:** Index must be prepared and be given invariably in the report at the end.

The order presented above only gives a general idea of the nature of a technical report; the order of presentation may not necessarily be the same in all the technical reports. This, in other words, means that the presentation may vary in different reports; even the different sections outlined above will not always be same, nor will all these sections appear in any particular report.

It should, however, be remembered that even in a technical report, simple presentation and ready availability of the findings remain an important consideration and as such the liberal use of charts and diagrams is considered desirable.

(B) Popular Report

The popular report is one which gives emphasis on simplicity and attractiveness. The simplification should be sought through clear writing, minimization of technical, particularly mathematical, details and liberal use of charts diagrams. Attractive layout along with large print, many subheadings, even an occasional cartoon now and then is another characteristic feature of the popular report. Besides, in such a report emphasis is given on practical aspects and policy implications.

We give below a general outline of a popular report.

- (1) **The findings and their implications:** Emphasis in the report is given on the findings of most practical interest and on the implications of these findings.
- (2) **Recommendations for action:** Recommendations for action on the basis of the findings of

the study is made in this section of the report.

- (3) **Objective of the study:** A general review of how the problem arises is presented along with the specific objectives of the project under study.
- (4) **Methods employed:** A brief and non-technical description of the methods and techniques used, including a short review of the data on which the study is based, is given in this part of the report.
- (5) **Results:** This section constitutes the main body of the report wherein the results of the study are presented in clear and non-technical terms with liberal use of all sorts of illustrations such as charts, diagrams and the like ones.
- (6) **Technical appendices:** More detailed information on methods used, forms etc. is presented in the form of appendices. But the appendices are often not detailed if the report is entirely meant for general public.

There can be several variations of the form in which a popular report can be prepared. The only important thing about such a report is that it gives emphasis on simplicity and policy implications from the operational point of view, avoiding the technical details of all sorts to the extent possible.

OTHER TYPES OF REPORTS ARE GIVEN BELOW:

Different Types of Reports serve various purposes, and understanding their distinctions is crucial for effective communication in academic, professional, and organisational settings. Here, we'll explore four common types of Reports:

1. Routine Reports

Routine Reports are regular updates on ongoing activities, often within an organisation. These Reports provide concise information about daily or periodic operations, helping stakeholders stay informed and make informed decisions.

They focus on facts and figures, avoid unnecessary details, and typically follow a standardised format. Examples include daily Sales Reports, Attendance Reports, And Inventory Status Reports. Routine Reports are essential for tracking performance and ensuring smooth operations.

2. Special Reports

Special Reports are more in-depth and are created for specific purposes, such as investigating a particular issue or analysing a unique situation. These Reports require extensive research, Critical

Thinking, and a comprehensive presentation of findings. They are often used to address complex problems or make critical decisions.

For instance, a company might commission a Special Report to evaluate the impact of a new product launch, or a government agency might prepare a Special Report on the environmental impact of a policy change. Special Reports provide a thorough examination of a specific topic and often include detailed recommendations.

3. Formal Reports

Formal Reports are comprehensive and meticulously structured documents characterized by a standardized format. They usually include a title page, table of contents, executive summary, methodology, findings, discussion, recommendations, and conclusion. Writing Research Proposal is a common type of Formal Report. Formal Reports are common in academic and corporate environments, as well as in government and research institutions.

They are used to present detailed information and analyses, often for decision-making or academic purposes. A thesis, a business proposal, or an annual Financial Report are examples of Formal Reports. These Reports require a high degree of professionalism and follow strict formatting and citation guidelines.

4. Informal Reports

Informal Reports are less structured and often used for internal communication within an organization. They are generally shorter and more straightforward than Formal Reports, emphasizing brevity and efficiency. Memos, email updates, and short Progress Reports are common examples of informal Reports. They serve to share information quickly, often within a department or among team members. Informal Reports are valuable for everyday communication, problem-solving, and decision-making within an organization, and they do not require the extensive structure and formality of Formal Reports. Master the art of professional Email communication with our Email Etiquette Training – Boost your online presence and productivity now!

24.5 ORAL PRESENTATION

At times oral presentation of the results of the study is considered effective, particularly in cases

where policy recommendations are indicated by project results. The merit of this approach lies in the fact that it provides an opportunity for give-and- takes decisions which generally lead to a better understanding of the findings and their implications. But the main demerit of this sort of presentation is the lack of any permanent record concerning the research details and it may be just possible that the findings may fade away from people's memory even before an action is taken. In order to overcome this difficulty, a written report may be circulated before the oral presentation and referred to frequently during the discussion. Oral presentation is effective when supplemented by various visual devices. Use of slides, wall charts and blackboards are quite helpful in contributing to clarity and in reducing the boredom, if any. Distributing a board outline, with a few important tables and charts concerning the research results, makes the listeners attentive who have a ready outline on which to focus their thinking. This very often happens in academic institutions where the researcher discusses his research findings and policy implications with others either in a seminar or in a group discussion.

Thus, research results can be reported in more than one way, but the usual practice adopted, in academic institutions particularly, is that of writing the Technical Report and then preparing several research papers to be discussed at various forums in one form or the other. But in practical field and with problems having policy implications, the technique followed is that of writing a popular report. Researches done on governmental account or on behalf of some major public or private organizations are usually presented in the form of technical reports.

24.6 MECHANICS OF WRITING A RESEARCH REPORT

There are very definite and set rules which should be followed in the actual preparation of the research report or paper. Once the techniques are finally decided, they should be scrupulously adhered to, and no deviation permitted. The criteria of format should be decided as soon as the materials for the research paper have been assembled. The following points deserve mention so far as the mechanics of writing a report are concerned:

- (1) **Size and physical design:** The manuscript should be written on unruled paper 8½"×11" in size. If it is to be written by hand, then black or blue-black ink should be used. A margin of at least one and one-half inches should be allowed at the left hand and of at least half an inch at the right hand of the paper. There should also be one-inch margins, top and bottom. The paper should be neat and legible. If the manuscript is to be typed, then all typing should be double-spaced on one side of the page only except for the insertion of the long quotations.
- (2) **Procedure:** Various steps in writing the report should be strictly adhered (All such steps have already been explained earlier in this chapter).

- (3) **Layout:** Keeping in view the objective and nature of the problem, the layout of the report should be thought of and decided and accordingly adopted (The layout of the research report and various types of reports have been described in this chapter earlier which should be taken as a guide for report-writing in case of a particular problem).
- (4) **Treatment of quotations:** Quotations should be placed in quotation marks and double spaced, forming an immediate part of the text. But if a quotation is of a considerable length (more than four or five type written lines) then it should be single-spaced and indented at least half an inch to the right of the normal text margin.
- (5) **The footnotes:** Regarding footnotes one should keep in view the followings:
- (a) The footnotes serve two purposes viz.; the identification of materials used in quotations in the report and the notice of materials not immediately necessary to the body of the research text but still of supplemental value. In other words, footnotes are meant for cross references, citation of authorities and sources, acknowledgement and elucidation or explanation of a point of view. It should always be kept in view that footnote is neither an end nor a means of the display of scholarship. The modern tendency is to make the minimum use of footnotes for scholarship does not need to be displayed.
 - (b) Footnotes are placed at the bottom of the page on which the reference or quotation which they identify or supplement ends. Footnotes are customarily separated from the textual material by a space of half an inch and a line about one and a half inches long.
 - (c) Footnotes should be numbered consecutively, usually beginning with 1 in each chapter separately. The number should be put slightly above the line, say at the end of a quotation. At the foot of the page, again, the footnote number should be indented and typed a little above the line. Thus, consecutive numbers must be used to correlate the reference in the text with its corresponding note at the bottom of the page, except in the case of statistical tables and other numerical material, where symbols such as the asterisk (*) or the like one may be used to prevent confusion.
 - (d) Footnotes are always typed in single space though they are divided from one another by double space.
- (6) **Documentation style:** Regarding documentation, the first footnote reference to any given work should be complete in its documentation, giving all the essential facts about the edition used. Such documentary footnotes follow a general sequence. The common order may

be described as under:

- (i) Regarding the single-volume reference
 1. Author's name in normal order (and not beginning with the last name as in a bibliography) followed by a comma;
 2. Title of work, underlined to indicate italics;
 3. Place and date of publication;
 4. Pagination references (The page number).

Example

John Gassner, Masters of the Drama, New York: Dover Publications, Inc. 1954, p. 315

- (ii) Regarding multi volume reference
 1. Author's name in the normal order;
 2. Title of work, underlined to indicate italics;
 3. Place and data of publication;
 4. Number of volumes;
 5. Pagination references (The page number)

- (iii) Regarding works arranged alphabetically

For works arranged alphabetically such as encyclopedias and dictionaries, no pagination reference is usually needed. In such cases the order is illustrated as under:

Example 1

"Salamanca," Encyclopedia Britannica, 14th Edition.

Example 2

"Mary Wollstonecraft Godwin," Dictionary of national biography. But if there should be a detailed reference to a long encyclopedia article, volume and pagination reference may be found necessary.

- (iv) Regarding periodicals reference
1. Name of the author in normal order;
 2. Title of article, in quotation marks;
 3. Name of periodical, underlined to indicate italics;
 4. Volume number;
 5. Date of issuance;
 6. Pagination

- (v) Regarding anthologies and collections reference

Quotations from anthologies or collections of literary works must be acknowledged not only by author, but also by the name of the collector.

- (vi) Regarding second-hand quotations reference

In such cases the documentation should be handled as follows:

1. Original author and title;
2. “Quoted or cited in,”;
3. Second author and work.

Example

J.K. Jones, *Life in Polynesia*, p. 16, quoted in *History of the Pacific Ocean area*, by R.B. Abel, p. 191.

- (vii) Case of multiple authorship

If there are more than two authors or editors, then in the documentation the name of only the first is given and the multiple authorship is indicated by “et al.” or “and others.”

Subsequent references to the same work need not be so detailed as stated above. If the work is cited again without any other work intervening, it may be indicated as *ibid*, followed by a comma and the page number. A single page should be referred to as p., but more than one page be referred to as pp. If there are serial pages referred to at a stretch, the practice is to use often the page number, for example, pp. 190ff,

which means page number 190 and the following pages; but only for page 190 and the following page '190f'. Roman numerical is generally used to indicate the number of the volume of a book. Op. cit. (opera citato, in the work cited) or Loc. cit. (loco citato, in the place cited) is two of the very convenient abbreviations used in the footnotes. Op. cit. or Loc. cit. after the writer's name would suggest that the reference is to work by the writer which has been cited in detail in an earlier footnote but intervened by some other references.

- (7) **Punctuation and abbreviations in footnotes:** The first item after the number in the footnote is the author's name, given in the normal signature order. This is followed by a comma. After the comma, the title of the book is given: the article (such as "A", "An", "The" etc.) is omitted and only the first word and proper nouns and adjectives are capitalized. The title is followed by a comma. Information concerning the edition is given next. This entry is followed by a comma. The place of publication is then stated; it may be mentioned in an abbreviated form, if the place happens to be a famous one such as Land. For London, N.Y. for New York, N.D. for New Delhi and so on. This entry is followed by a comma. Then the name of the publisher is mentioned and this entry is closed by a comma. It is followed by the data of publication if the date is given on the title page. If the date appears in the copyright notice on the reverse side of the title page or elsewhere in the volume, the comma should be omitted and the date enclosed in square brackets [c 1978], [1978]. The entry is followed by a comma. Then follow the volume and page references and are separated by a comma if both are given. A period closes the complete documentary reference. But one should remember that the documentation regarding acknowledgements from magazine articles and periodical literature follow a different form as stated earlier while explaining the entries in the bibliography.
- (8) **Use of statistics, charts and graphs:** A judicious use of statistics in research reports are often considered a virtue for it contributes a great deal towards the clarification and simplification of the material and research results. One may well remember that a good picture is often worth more than a thousand words. Statistics are usually presented in the form of tables, charts, bars and line- graphs and pictograms. Such presentation should be self-explanatory and complete in itself. It should be suitable and appropriate looking to the problem at hand. Finally, statistical presentation should be neat and attractive.
- (9) **The final draft:** Revising and rewriting the rough draft of the report should be done with great care before writing the final draft. For the purpose, the researcher should put to himself questions like; Are the sentences written in the report clear? Are they grammatically correct? Do they say what is meant? Do the various points incorporate in the report fir together

logically? “Having at least one colleague read the report just before the final revision is extremely helpful. Sentences that seem crystal-clear to the writer may prove quite confusing to other people; a connection that had seemed self-evident may strike others as a non-sequitur. A friendly critic, by pointing out passages that seem unclear or illogical, and perhaps suggesting ways of remedying the difficulties, can be an invaluable aid in achieving the goal of adequate communication.”

- (10) **Bibliography:** Bibliography should be prepared and appended to the research report as discussed earlier.
- (11) **Preparation of the index:** At the end of the report, an index should invariably be given, the value of which lies in the fact that it acts as a good guide to the reader. Index may be prepared both as subject index and as author index. The former gives the names of the subject-topics or concepts along with the number of pages on which they have appeared or discussed in the report, whereas the latter gives the similar information regarding the names of authors. The index should always be arranged alphabetically. Some people prefer to prepare only one index common for names of authors, subject-topics, concepts and the like ones.

24.7 PRECAUTIONS FOR WRITING RESEARCH REPORTS

Research report is a channel of communicating the research findings to the readers of the report. A good research report is one which does this task efficiently and effectively. As such it must be prepared keeping the following precautions in view:

1. While determining the length of the report (since research reports vary greatly in length), one should keep in view the fact that it should be long enough to cover the subject but short enough to maintain interest. In fact, report-writing should not be a means to learning more and more about less and less.
2. A research report should not, if this can be avoided, be dull; it should be such as to sustain reader’s interest.
3. Abstract terminology and technical jargon should be avoided in a research report. The report should be able to convey the matter as simply as possible. This, in other words, means that report should be written in an objective style in simple language, avoiding expressions such as “it seems,” “there may be” and the like.
4. Readers are often interested in acquiring quick knowledge of the main findings and as such the report must provide a ready availability of the findings. For this purpose, charts, graphs and

the statistical tables may be used for the various results in the main report in addition to the summary of important findings.

5. The layout of the report should be well thought out and must be appropriate and in accordance with the objective of the research problem.
6. The reports should be free from grammatical mistakes and must be prepared strictly in accordance with the techniques of composition of report-writing such as the use of quotations, footnotes, documentation, proper punctuation and use of abbreviations in footnotes and the like.
7. The report must present the logical analysis of the subject matter. It must reflect a structure wherein the different pieces of analysis relating to the research problem fit well.
8. A research report should show originality and should necessarily be an attempt to solve some intellectual problem. It must contribute to the solution of a problem and must add to the store of knowledge.
9. Towards the end, the report must also state the policy implications relating to the problem under consideration. It is usually considered desirable if the report makes a forecast of the probable future of the subject concerned and indicates the kinds of research still needs to be done in that particular field.
10. Appendices should be enlisted in respect of all the technical data in the report.
11. Bibliography of sources consulted is a must for a good report and must necessarily be given.
12. Index is also considered an essential part of a good report and as such must be prepared and appended at the end.
13. Report must be attractive in appearance, neat and clean, whether typed or printed.
14. Calculated confidence limits must be mentioned and the various constraints experienced in conducting the research study may also be stated in the report.
15. Objective of the study, the nature of the problem, the methods employed and the analysis techniques adopted must all be clearly stated in the beginning of the report in the form of introduction.

24.8 LET US SUM UP

In spite of all that has been stated above, one should always keep in view the fact report-writing is an art which is learnt by practice and experience, rather than by mere doctrinarian.

24.9 GLOSSARY

1. **Report writing:** It involves systematically presenting the entire research process and its findings in a clear, concise, and organized manner. It's a crucial step after conducting research, requiring careful planning, structuring, and execution to effectively communicate the study's purpose, methods, results, and conclusions.
2. **Quantitative vs. Qualitative Reports:** Adapt the report structure and presentation based on the research approach (quantitative or qualitative).
3. **Popular vs. Technical Reports:** Tailor the report's style and level of detail for the intended audience.
4. **Appendices:** Include detailed information (e.g., questionnaires, interview transcripts) in appendices.

24. 10 SELF ASSESSMENT QUESTIONS

Q1. Write in brief about different steps used in writing report.

Q2. What is meant by Oral Presentation.

Q3. Discuss in detail about various precautions used in writing report.

24.11 LESSON END EXERCISE

❖ MULTIPLE CHOICE QUESTIONS

1. How should a report writer handle biased language?

- a. Embrace it for personal flair
- b. Avoid it to maintain objectivity
- c. Use it to engage the reader
- d. Include it for creativity

2. What is the key to effective data presentation in a report?

- a. Avoiding visuals
- b. Providing excessive details
- c. Organizing information logically
- d. Ignoring numerical data

3. When is it appropriate to use passive voice in report writing?

- a. Always
- b. When emphasizing personal actions
- c. To maintain objectivity
- d. Only in the introduction

4. What should be the tone of a formal report?

- a. Casual and conversational
- b. Subjective and emotional
- c. Objective and professional
- d. Humorous and light-hearted

5. What is the purpose of an appendix in a report?

- a. To include personal opinions
- b. To present key findings
- c. To provide supplementary material
- d. To confuse the reader

6. How should a report writer handle conflicting information?

- a. Exclude it from the report
- b. Address and reconcile discrepancies
- c. Present only one perspective
- d. Ignore the inconsistencies

7. What should be avoided in the executive summary of a report?

- a. Summarizing key findings
- b. Including recommendations
- c. Providing an overview of the report
- d. Adding unnecessary details

8. How does a report writer ensure coherence in the document?

- a. Including irrelevant information
- b. Ignoring logical flow
- c. Using transitional phrases
- d. Disregarding a clear structure

9. In report writing, what is the purpose of the literature review?

- a. To showcase personal opinions
- b. To summarize key findings
- c. To provide context and background
- d. To present recommendations

10. What is the first step in the report writing process?

- a. Proofreading
- b. Research and planning
- c. Writing the conclusion
- d. Adding visuals

24.12 ANSWER KEY (LESSON END EXERCISE)

Answers:

- 1. b. Avoid it to maintain objectivity**
- 2. c. Organizing information logically**
- 3. c. To maintain objectivity**
- 4. c. Objective and professional**
- 5. c. To provide supplementary material**
- 6. b. Address and reconcile discrepancies**
- 7. d. Adding unnecessary details**
- 8. c. Using transitional phrases**
- 9. c. To provide context and background**
- 10. b. Research and planning**

24.13 SUGGESTED READINGS

- Babbie, Earl, *The Practice of Social Research* (8th ed.), Wadsworth Publishing Co., Albany, New York, 1998.
- Black, James A. and Dean J. Champion, *Methods and Issues in Social Research*, John Wiley, New York, 1976.
- Manheim, Henry, *Sociological Research: Philosophy and Methods*, The Dorsey Press, Illinois, 1977.
- Russell, Ackoff, *Design of Social Research*, University of Chicago Press, Chicago, 1961.

- Singleton, Royce and Bruce C. Straits, *Approaches to Social Research* (3rd ed.) Oxford University Press, New York, 1989.

