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# CHAPTER ONE INTRODUCTION

## INTRODUCTION

## 1.1 DEFINITION OF RESEARCH

- ✓ The word research is composed of two syllables, *re* & *search*. The dictionary defines the former as a prefix meaning *again, anew, or over again* and the latter as a verb meaning *to examine closely and carefully, to test and try, or to prob*.
- Together they form a noun describing a *careful, systematic, patient study and investigation in some field of knowledge, undertaken to establish facts or principles* (Grinnell, 1993:)
- ✓ It refers to a *search for knowledge*.
- ✓ It can also be defined as a *scientific and systematic search for pertinent information on a specific topic*.
  - In fact, research is an art of scientific investigation

- ✓ According to Burns (1994:4), research is “*a systematic investigation to find answers to a problem.*”
- ✓ As to the Advanced Learner’s Dictionary of Current English, “*research is a careful investigation or inquiry specially through search for new facts in any branch of knowledge.*”
- ✓ Some people consider research as a movement, a movement from the known to the unknown.
  - It is actually *a voyage of discovery.*
- ✓ It is an *original contribution to the existing stock of knowledge making for its advancement.*
- ✓ It is the pursuit of truth with the help of study, observation, comparison and experiment.

- ✓ The term '**research**' refers to “*the systematic method consisting of explain the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solution(s) towards the concerned problem or in certain generalizations for some theoretical formulation.*”
- ✓ In short, the search for knowledge through *objective and systematic* method of finding solution to a problem is research.
- ✓ **What is not a research then?**
- ✓ **Research isn't merely information gathering:**
  - ✓ Gathering information from resources such as books or magazines isn't considered as a research as it doesn't contribute to new knowledge.

- ✓ The transportation of facts cannot be considered as a research:
  - ✓ Merely transporting facts from one resource to another doesn't constitute research.
    - ✓ No contribution to new knowledge although this might make existing knowledge more accessible.
- ✓ “If we knew what we were doing, it wouldn't be research,” Albert Einstein

## 1.2 CHARACTERISTICS OF RESEARCH

- ✓ A good research must qualify (meet) the following characteristics:
  - It must, as far as possible, be *controlled, rigorous, systematic, valid and verifiable, reliable, empirical, and critical.*
- **Controlled:**
  - ✓ In real life, there are many factors that affect an outcome.
  - ✓ A particular event is seldom the result of a one – to – one relationship.
    - Some relationships are more complex than others.
    - Most outcomes are a sequel to the interplay of a multiplicity of relationships and interacting factors.

- ✓ In a study of cause – and – effect relationships, it is important to be able to link the effect(s) with the cause(s) and vice versa.
- ✓ In the study of causation, the establishment of this linkage is essential.
- ✓ However, in practice, particularly in the social sciences, it is extremely difficult – and often impossible – to make the link.
- ❖ The *concept of control* implies that, in exploring causality in relation to two variables, you set up your study in a way that *minimizes the effects of other factors affecting the relationship*.
- **Rigorous:**
  - ✓ You must be scrupulous in ensuring that the *procedures* followed to find answers to questions are *relevant, appropriate, and justified*.



■ **Systematic:**

- ✓ This implies that the procedures adopted to undertake an investigation follow a certain *logical sequence*.
- The different steps cannot be taken in a haphazard way.
- Some procedures must follow others.
- And *the steps or procedures in general* are:
  - ✓ Understanding the nature of problem to be studied and identifying the related area of knowledge.
  - ✓ Reviewing literature to understand how others have approached or dealt with the problem.
  - ✓ Collecting data in an organized and controlled manner so as to arrive at valid decisions.
  - ✓ Analyzing data appropriate to the problem.
  - ✓ Drawing conclusions and making generalizations.

- **Valid and verifiable:**

- ✓ This concept implies that whatever you conclude on the basis of your findings is *correct* and can be *verified by you and others*.
- ✓ By validity, we mean that the researcher must obtain the reality of responses of those people who are under the test through comparing their responses with such truth that in deed is truth.
- ✓ *Validity refers to the accuracy of an assessment -- whether or not it measures what it is supposed to measure.*

- *Validity* is defined as the degree to which the instrument measures what it's *supposed to measure*.
  - If an instrument is not reliable over time, it cannot be valid, as results can vary depending upon when it is administered.
- *Validity* refers to the *credibility or believability* of the research. Are the findings *genuine*?
  - Is *hand strength* a valid measure of intelligence?  
Almost certainly the answer is “*No, it is not.*”
- Generally, we have two types of validity:
  - 1) *Internal validity*
  - 2) *External validity*

- *Internal validity - the instruments or procedures used in the research measured what they were supposed to measure.*
- *In research, internal validity is the extent to which you are able to say that no other variables except the one you're studying caused the result.*
  - *For example, if we are studying the variable of **pay** and the result of hard work, we want to be able to say that no other reason (not personality, not motivation, not competition) causes the hard work.*
    - *We want to say that pay and pay alone makes people work harder.*

- *Internal validity refers to whether the effects observed in a study are due to the manipulation of the independent variable and not some other factor.*
  - *In-other-words, there is a causal relationship between the independent and dependent variable.*
  - *Internal validity can be improved for instance by controlling extraneous variables,...*
- **External validity** - the results can be generalized beyond the immediate study.
  - It should also apply to people beyond the sample in the study.
  - *External validity* is the extent to which results of a study can be generalized to the world at large.

- ✓ When we conduct experiments, our goal is to demonstrate cause and effect relationships between the independent and dependent variables.
  - ✓ We often try to do it in a way that enables us to make statements about *people at large*.
    - A study that readily allows its findings to generalize to the population at large has high **external validity**.

## ■ **Reliability:**

- ✓ Assumes that if another person were to repeat a specific research study, he should be able to capture the same results.
- Reliability demonstrates that the operation of a study, such as the data collection procedures, can be repeated with the same outcome.
- The objective is to ensure that if a later researcher followed exactly the same procedures as described by an earlier researcher and conducted the same case study all over again; the later researcher should arrive at the same conclusion.

- ***Reliability** is the degree to which an assessment tool produces stable and consistent results.*
- *Reliability is the overall consistency of a measure. A measure is said to have a high **reliability** if it produces similar results under consistent conditions. For example, measurements of people's height and weight are often extremely **reliable**.*
- *Reliability refers to the repeatability of findings. If the study were to be done a second time, would it yield the same results? **If so, the data are reliable.***
- *If more than one person is observing behavior or some event, all observers should agree on what is being recorded in order to claim that the data are reliable.*
- ❖ *Note that while **Reliability** refers to the consistency or stability of the test scores; **validity** refers to the accuracy of the inferences or interpretations you make from the test scores.*



- **Empirical:**

- ✓ This means that any conclusions drawn are based upon *hard evidence gathered from information collected from real – life experiences or observations.*

- **Critical:**

- ✓ Critical scrutiny of the procedures used and the methods employed is crucial to a research inquiry.

- ✓ The process of investigation must be *foolproof and free from any drawbacks.*

- ✓ The process adopted and the procedures used must be able to *withstand critical scrutiny.*

- ❖ *Thus, For a process (a study) to be called a research, it is imperative that it has the above characteristics.*

## 1.3 TYPES OF EXPLANATIONS (ARGUMENT DEVELOPMENT) IN SCIENTIFIC METHOD

✓ In research, we often refer to the two broad methods of reasoning to generate theories of proof or disprove theories:

➤ These are inductive and deductive reasoning.

1) ***Deductive reasoning (explanation)***: it is an explanation of results from *general to specific*.

*E.g.*: All businessmen are conservative. This man is a business man ; therefore, he must be a conservative.

2) ***Inductive reasoning (explanation)***: an inductive explanation is one that uses *individual observation to formulate a general rule*.

➤ Is an explanation of results that goes from *specific to general*.

*E.g.:* A researcher thoroughly studies a businessman who is a conservative. Based on his/her observation of the conservative businessman, he/she arrives at a conclusion that *all businessmen are conservative*.

## 1.4 OBJECTIVES OF RESEARCH

- The purpose of research is to discover *answers to questions through the application of scientific procedures*.
- The main aim of research is to *find out the truth which is hidden and which has not been discovered yet*.
- Research plays a major role in applying a truly analytical approach to decision making.
- Besides, it also assists in the *evaluation of effect of decisions which have been taken*.
- In general, social scientists believe that the ultimate aim of research must be *social benefit*.
  - *It must solve society's problem!*

➤ Thought each research study has its own specific purpose, the following are the five principal *objectives of all Social Science Research*:

1. Research is conducted to *help scientists understand the properties of a phenomenon*.

➤ This process enables the scientists to establish categories, classes, or types of phenomenon.

➤ In Economics Research, for example, the following are set of categories: *Savers-Non-Savers Category, Productive-Non-Productive Category*, etc.

2. Research is conducted to enable Scientists *to understand relationships between variables*.

➤ This is a quest to present conclusive evidence (casual links) that a relationship exists between two or more phenomena.

3. *The production of a theory* is the third objective, and it is considered to be the ultimate goal of all Scientific researches.
4. The fourth principal aim of research is *the prediction of outcomes*.
- Prediction is based upon a thorough understanding of prior theory generation.
  - For example, the determination of the *frequency with which something occurs* or with which it is associated with something else.
5. The final aim of scientific research is *the confirmation of the findings in one study by other researchers-replication*.
- That means it is conducted to *confirm or refute study or a body of knowledge* by a community of other researchers.

## 1.5 TYPES (CLASSIFICATION) OF RESEARCH

✓ Research can be classified from three perspectives:

**i. Application** of the research study

- 1) Applied research
- 2) Pure research

**ii. Objectives** in undertaking the research

- 1) Descriptive
- 2) Correlational
- 3) Explanatory
- 4) Exploratory

**iii. Inquiry mode** employed

- 1) Quantitative
- 2) Qualitative

- ✓ These three classifications *are not mutually exclusive*;
  - ✓ i.e., a research study classified from the view point of ‘application’ can also be classified from the perspective of ‘objectives’ and ‘inquiry mode employed.’
- ✓ For example, a research project may be classified as pure or applied research (from the perspective of application), as descriptive, correlational, explanatory or exploratory (from the perspective of objectives) and as quantitative or qualitative (from the perspective of the inquiry mode employed).



# I. APPLICATION OF THE RESEARCH STUDY

## 1. Applied (Action) research:

- ✓ This is a type of research which is aimed at *finding a solution for an immediate problem facing a society or an industrial/business organization.*
- The research worker *must solve a short term problems faced by the society.*
- Research to identify social, economic or political trends that may affect a particular institution or the marketing research or evaluation research are examples of applied research.
- Thus, **the central aim of applied research is to discover a solution for some pressing practical problem.**

## 2. Pure (Basic, Theoretical or Fundamental) Research:

- ✓ It is *academic in nature and the findings may or may not be used in the very near or immediate future.*
- ✓ It is also the development of procedures and principles for the advancement of knowledge that have long run implication like in Economics and finance.
- ✓ Fundamental research is mainly concerned with *generalizations and with the formulation of a theory.*
- ✓ “Gathering knowledge for knowledge’s sake” is termed ‘pure’ or ‘basic’ research.
- ✓ Research concerning some natural phenomenon or relating to pure mathematics are examples of fundamental research.

- ✓ Similarly, research studies, concerning human behavior carried on with a view to make generalizations about human behavior, are also examples of fundamental research.
- ✓ In general, fundamental research is directed towards *finding information* that has a broad base of applications and thus, *adds to the already existing organized body of scientific knowledge.*

## II. OBJECTIVES IN UNDER TAKING RESEARCH

### 1. Descriptive research:

- ✓ It is a type of research which attempts to *describe systematically a situation, problem, phenomenon, service or program.*
- ✓ Or it may provide information about, say, the living conditions of a community, or describes attitudes towards an issue.
- ✓ For example, it may attempt to describe
  - ✓ The types of service provided by an organization,
  - ✓ The administrative structure of an organization,
  - ✓ The needs of a community,

- ✓ What it means to go through a divorce,
  - ✓ How a child feels living in a house with domestic violence, or
  - ✓ The attitudes of employees towards management.
- ✓ In short, the main purpose of such studies is *to describe what is prevalent with respect to the issue/problem under study*.

## 2. Correlational research:

- ✓ It is a type of research that is done to establish or investigate the *existence of a relationship between two or more variables* (aspects of a situation).

- ✓ For instance:
  - ✓ What is the impact of an advertising campaign on the sale of a product?
  - ✓ What is the relationship between stressful living and the incidence of heart attack?
  - ✓ What is the relationship between fertility and mortality?
  - ✓ What is the relationship between technology and unemployment?
  - ✓ What is the effect of the home environment on educational achievement?

### **3. Explanatory research:**

- ✓ Here the researcher *goes beyond describing the characteristics, to analyzing and explaining why or how it is happening*

- ✓ Thus, Explanatory Research aims to understand phenomena *by discovering and measuring casual relations among them.*
- *Explanatory research attempts to clarify why and how there is a relationship between two aspects of a situation or phenomenon.*
- ✓ This type of research attempts to explain, for example:
  - ✓ Why stressful living results in heart attacks;
  - ✓ Why a decline in mortality is followed by fertility decline;
  - ✓ How the home environment affects children's level of academic achievement.

#### **4. Exploratory research:**

- ✓ This study is undertaken *with the objective of exploring an area where little is known or no prior studies are conducted to the problem which we are referring to.*

### III. INQUIRY MODE EMPLOYED

- ✓ The third perspective in our typology of research concerns the process you adopt to find answers to your research questions.
- ✓ Broadly, there are two approaches to inquiry:
  1. **Quantitative Research (structured approach):**
    - ✓ This is a type of research that is done if we are interested to *quantify the extent (magnitude)* of a problem, situation, issue or phenomenon.
    - It is applicable to phenomena that can be *expressed in terms of quantity*.
    - ✓ In the structured approach, everything that forms the research process – objectives, design, sample, and the questions that you plan to ask of respondents – *is predetermined!*
    - ✓ The unstructured approach, by contrast, allows flexibility in all these aspects of the process.



## 2. Qualitative research (unstructured approach):

- ✓ Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., *phenomena relating to or involving quality or kind*.
- ✓ For instance, when we are interested in investigating the reasons for human behavior (i.e., why people think or do certain things), we quite often talk of ‘*Motivation Research*’, an important type of qualitative research.
- ✓ This type of research aims at discovering the underlying motives and desires, using *in depth interviews* for the purpose.
- Research designed to find out how people feel or what they think about a particular subject or institution is also qualitative research.

- ✓ Qualitative research is specially important in the *behavioral sciences* where the aim is **to discover the underlying motives of human behavior**.
- Through such research, we can analyze the various factors which motivate people to behave in a particular manner or which make people like or dislike a particular thing.
- Note that both approaches have their place in research. Both have their strengths and weaknesses.
- Therefore, ***you should not 'lock' yourself in to solely quantitative or qualitative research.***
- The choice of structured or unstructured approach, and of a quantitative or qualitative mode of inquiry, should depend upon:

- ✓ **Aim of your inquiry:** Describing, quantification...
- ✓ **Use of the findings:** policy formulation, or process understanding.
- ✓ The study for instance is classified as qualitative if the purpose of the study is primarily:
  - ✓ To describe a situation, phenomenon, problem, or event; the information is gathered through the use of variables measured on *nominal or ordinal scales* (qualitative measurement scales);
  - ✓ And if analysis is done to *establish the variation* in the situation, phenomenon or problem *without quantifying* it.
- ✓ On the other hand, the study is classified as a quantitative study:

- ✓ if you want to *quantify the variation* in a phenomenon, situation, problem, or issue;
- ✓ If information is gathered using *predominantly quantitative variables*; and
- If the analysis is geared to ascertain the *magnitude of the variation*.

Examples:

- ✓ How many people have a particular problem?
- ✓ How many people hold a particular attitude?
- Other types of research if any ????
- Read!                      Read!                      Read! ..... 😊

## 1.6 MOTIVATION IN RESEARCH

- What makes people to undertake research?
- ✓ The possible motives for doing research may be either one or more of the following:
  1. *Desire to get a research degree* along with its consequential benefits;
  2. *Desire to face the challenge in solving the unsolved problems*, i.e., concern over practical problems initiates research;
  3. *Desire to get intellectual joy of doing some creative work*;
  4. *Desire to be of service to society*;
  5. *Desire to get ~~reputation~~ ~~stability~~*

- ✓ However, this is *not an exhaustive list* of factors motivating people to undertake research studies.
- ✓ Many more factors such as directives of government, employment conditions, curiosity about new things, desire to understand causal relationships, social thinking and awakening, and the like may as well motivate people to perform research operations.

## *1.7 Significance of Research*

- *“All progress is born of inquiry. **Doubt is often better than overconfidence, for it leads to inquiry, and inquiry leads to invention**” is a famous Hudson Maxim in context of which the significance of research can well be understood.*
- *(Hudson Maxim, was a U.S. inventor and chemist who invented a variety of explosives, including smokeless gunpowder, Thomas Edison (an American inventor and businessman, who has been described as America's greatest inventor) referred to him as “the most versatile man in America”).*
- *Increased amounts of research make **progress possible**.*
- *Research inculcates scientific and inductive thinking and it promotes the development of logical habits of thinking and organization.*

- *The role of research in several fields of applied economics, whether related to business or to the economy as a whole, has greatly increased in modern times.*
- *The increasingly complex nature of business and government has focused attention on the use of research in solving operational problems.*
- *Research, as an aid to economic policy, has gained added importance, both for government and business.*
- *Research provides the basis for nearly all government policies in our economic system.*
- *... Decision –making may not be a part of research, but research certainly facilitates the decisions of the policy maker.*



## CHAPTER TWO:

# FORMULATION OF RESEARCH PROBLEM AND HYPOTHESIS

## 2.1 Research problem:

- ✓ The central aim of this chapter is to detail the process of Research problem & hypothesis formulation.
- **Question: what is a research problem?**
- ✓ Broadly speaking, any question that you want answered, and any assumption or assertion that you want to challenge or investigate can become a research problem or a research topic for your study.
- ✓ However, it is important to remember that not all questions can be transformed in to research problems and some may prove to be extremely difficult to study.

- The following are the reasons for not transforming all questions in to research problems:
  - ✓ Nature of the problem; for example, some may prove to be extremely difficult to study;
  - ✓ Lack of Data;
  - ✓ Time and resource considerations;
  - ✓ Expertise lacks;
- ✓ As a new comer, It might seem easy to formulate a problem but it requires a considerable knowledge of both the subject area and research methodology.
  - Hence you should spend considerable time in thinking it through.
- In general, the following points may be observed by a researcher in selecting a research problem or a subject for

- 1) Subject which is overdone should not be normally chosen, for it will be a difficult task to throw any new light in such a case.
- 2) Controversial subject should not become the choice of an average researcher.
- 3) Too narrow or too vague problems should be avoided.
- 4) The subject selected for research should be familiar and feasible so that the related research material or sources of research are within one's reach.
- 5) The importance of the subject, the qualifications and the training of a researcher, the costs involved, the time factor are few other criteria that must also be considered in selecting a problem.

- In other words, before the final selection of a problem is done, a researcher must ask himself the following questions:
- a) Whether he is well equipped in terms of his background to carry out the research?
  - b) Whether the study falls within the budget he can afford?
  - c) Whether the necessary cooperation can be obtained from those who must participate in research as subjects?

# THE IMPORTANCE OF FORMULATING A RESEARCH PROBLEM

- The formulation of a research problem is the first and most important step of the research process.
  - It is like the identification of a destination before undertaking a journey.
  - As in the absence of a destination, it is impossible to identify the shortest-or indeed any-route, in the absence of a clear research problem, a clear and economical plan is impossible.
  - ✓ A research problem is like the foundation of a building.
    - The type and design of the building is dependent up on the foundation.
    - If the foundation is well designed and strong, you can expect the building to be also.

- ✓ The research problem serves as the foundation of a research study; If it is well formulated, you can expect a good study to follow.
- If one wants to solve a problem, one must generally know what the problem is. It can be said that a large part of the problem lies in knowing what one is trying to do.
- ✓ You must have a clear idea with regard to what it is that you want to find out about and not what you think you must find.
- ✓ A research problem may take a number of forms, from the very simple to the very complex.
- ✓ The way you formulate a problem determines almost every step that follows:

- ✓ The type of the study design that can be used;
  - ✓ The type of sampling strategy that can be employed;
  - ✓ The research instrument that can be used or developed;
  - ✓ The type of analysis that can be undertaken.
- *Thus, formulating a research problem requires both **knowledge of a subject area** and **research Methodology***
- The formulation of a problem is like the “input” in to a study, and the “Output”- the quality of the contents of the research report and the validity of the associations or causations established- is entirely dependent up on it.
- Hence the famous saying about computers-”garbage in, garbage out”- is equally applicable to a research problem.



- ✓ Take time over formulating your problem, for the clearer you are about your research problem/question, the easier it will be for you later on.
- Remember, this is the most crucial step.
- So take due care in selecting and formulating a researchable problem. Once you develop the problem, 50% will be done from the 100% research study.
- The problem to be investigated must be defined unambiguously for that will help to discriminate relevant data from the irrelevant ones.
- Thus, defining a research problem properly is a prerequisite for any study and is a step of the highest importance.
- In fact, formulation of a problem is often more essential than its solution.

## 2.1.1. Criteria of a good Research Problem

✓ A topic should fulfill the following criteria in order to be called a good research problem:

1) Novelty or Originality:

○ Originality is one characteristics of a good research problem & implies that:

✓ The research problem should not be duplicated in the sense that it should have some new element.

✓ However, originality does not necessarily mean that the research problem should be totally new.

➤ While originality is an important consideration the fact that a problem has been investigated in the past does not mean that it is no longer fit for study.

## 2) Interesting:

- ✓ The problem should be interesting for the investigator himself.
- In other words, the researcher should have a strong inherent motivation for it.

## 3) Importance:

- ✓ It should add to the development of social setup as a discipline & to the previous research findings in any way.

## 4) Feasibility:

- ✓ The researcher should have the required qualities to carry out it successfully.

## 5) Availability of data.

6) Availability of cooperation:

- ✓ The investigator must make sure that necessary permission & cooperation will be readily available.

7) Availability of other facilities:

*E.g.:* Availability of financial resources & enough time to carry out the study.

8) Immediate application:

- ✓ The research should solve the problem on going.

## 2.1.2. Source of Research Problem

- ✓ Most researches in social science revolves around four P's:
  - ✓ People;
  - ✓ Problems;
  - ✓ Programs;
  - ✓ Phenomenon;
- ✓ The emphasis on a particular “P” may vary from study to study but generally, in practice, most research studies are based up on at least a combination of two Ps.


- ✓ You may select a group of individuals (a group or a community as such- “People”), either to examine the existence of a certain issues or problems relating to their lives, to ascertain attitude of a group of people towards an issue (“Problem”), to establish existence of a regularity (“Phenomenon”) or to evaluate the effectiveness of an intervention (“program”).
- ✓ Your focus may be the study of an issue, an association or a phenomenon *pursue*; for example, the relationship between unemployment and street crime, smoking and cancer or fertility and mortality, which is done on the basis of information collected from individuals, groups, communities or organizations. The emphasis in these studies is on exploring, discovering or establishing associations or causation.

- ✓ Similarly, you can study different aspects of a program; its effectiveness, its structure, the need for it, consumer's satisfaction with it, and so on.
- ✓ In order to ascertain these you collect information from people. The 'people' provide you with the 'study population', whereas the other three Ps furnish the 'subject area'.
  - Your study population-individuals, groups and communities- is the people from whom the information is collected.
  - Your subject area is a 'problem', 'program' about which the information is collected.
- ✓ A closer look at any academic discipline or occupational field will show that most research revolves around the four Ps.

- *Every research study has two aspects:*
  - *The study population;*
  - *The subject area*



# Table 2.1: Aspects of a research problem

Aspects of a study	About	Study of	
Study Population	People	Individuals, organizations groups, communities	They provide you with the required information or you collect information from or about them
Subject area	Problem	Issues, institutions, associations, needs, population composition, profiles, etc	 <p>Information that you need to collect to find answers to your research questions</p>
	Program	Contents, structure, outcome, attributes, satisfaction, consumers, service providers, etc.	
	Phenomenon	Cause-and-effect relationship, the study of a phenomenon it self, etc.	
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- ✓ You can study a problem, a program or a phenomenon in your academic field or from your professional perspective.
- ✓ For example, you can measure a welfare program or you can look at a problem from a welfare, business or health perspective. Similarly, you can gauge consumers' opinions about any aspect of a program in the above fields.
- ✓ Examine your own academic discipline or professional field in the context of the four Ps in order to identify any thing that looks interesting.
- ✓ Consider some of the aspects identified under 'Study of' in the above table against problem, program or phenomenon for a possible research topic.

- ✓ For example, as an Economics student there are an enormous number of issues, situations or associations within each Subfield and levels of Economics that you could examine.
- ✓ Issues relating to unemployment, inflation, pollution, effectiveness of a particular economic policy, customers' satisfaction concerning a particular program can all provide you with a range of research problems.

# Considerations in Selecting a research problem

- ✓ When selecting a research problem/topic there are a number of considerations to keep in mind.
- ✓ These help to ensure that your study will be manageable and that you will remain motivated.
- ✓ These considerations are:
  - Interest
  - Magnitude
  - Measurement of concepts
  - Level of expertise
  - Relevance
  - Availability of data and
  - Ethical issues

## 1. Interest:

- ✓ Interest should be the most important consideration in selecting a research problem.
- ✓ A research endeavor is usually time consuming, and involves hard work and possibly unforeseen problems.
- ✓ If you select a topic which doesn't greatly interest you, it could become extremely difficult to sustain the required motivation, and hence its completion as well as the amount of time taken could be affected.

## 2. Magnitude:

- ✓ You should have a sufficient knowledge about the research process to be able to visualize the work involved in completing the proposed study.
- Narrow the topic down to something manageable, scientific and clear.

- ✓ It is extremely important to select a topic that you can manage within the time and resource at your disposal.
- ✓ Even if you are undertaking a descriptive study, you need to carefully consider its magnitude.

### **3. Measurement of concepts:**

- ✓ If you are using a concept in your study, make sure you are clear about its indicators and their measurement.
- ✓ For example, if you plan to measure the effectiveness of a health promotion program, you must be clear as to what determines effectiveness and how it will be measured.
- ✓ Don't use concepts in your research problem that you are not sure how to measure.

- ✓ This doesn't mean you can't develop a measurement procedure as the study progresses.
- ✓ While most of the developmental works will be done during your study, it is imperative that you are reasonably clear about the measurement of these concepts at this stage.

#### **4. Level of expertise:**

- ✓ Make sure that you have an adequate level of expertise for the task you are proposing.
- ✓ Allow for the fact that you will learn during a study and may receive help from your research supervisor and others, but remember you need to do most of the work yourself.

## **5. Relevance:**

- ✓ Select a topic that is of relevance to you as a professional.
- ✓ Ensure that your study adds to the existing body of knowledge, bridges current gaps or useful in policy formulation.
- ✓ This will help you to sustain interest in the study.

## **6. Availability of Data:**

- ✓ If your topic entails collection of information from secondary sources (office records, client records, census or other already-published reports, etc.) before finalizing your topic, make sure that these data are available and in the format you want.



## 7. Ethical issues:

- ✓ An other important consideration in formulating a research problem is the ethical issues involved.
- ✓ In the course of conducting a research study, the study population may be adversely affected by some of the questions (directly and indirectly); deprived of an intervention; expected to share sensitive and private information.
- ✓ How ethical issues can affect the study population and how ethical problems can be overcome should be thoroughly examined at the problem-formulation stage.

## 2.1.3. Steps in the formulation of a research problem

- ✓ The formulation of a research problem is the most crucial part of the research journey on which the quality of the entire project depends.
- ✓ You guys; as beginners, Here what I do is that I will offer you a very specific step-by- step guidelines 😊
- ✓ N.B: Working through these steps presupposes a reasonable level of knowledge in the subject area with in which the study is to be undertaken. A brief review of the literature helps enormously in broadening this knowledge base. Because without such knowledge it is difficult to clearly and adequately ‘dissects’ a subject area.

- ✓ The process of formulating a research problem consists of a number of steps:

**Step 1: *Identify a broad field or subject area of interest to you.***

- ✓ Ask yourself, ‘what is it really interest me as a professional’? It is good to think about a field in which you would like to work after graduation.
- ✓ This will help you to find an interesting topic, and one which may be of use to you in the future.
- ✓ For example, as a student of Economics, you may be inclined to work in the area of Microeconomics, Macroeconomics, Development Economics, Natural Resource and Environmental Economics, Energy Economics, etc after graduation, you might take to research in one of these areas.

- *It is important that you identify one of interest to you before undertaking your research journey.*

## **Step 2: *Dissect the broad area in to sub areas.***

- ✓ At the one set, you will realize that all the areas mentioned above have many aspects.
- ✓ Take Microeconomics for instance; there are many aspects and issues in the area of Microeconomics. The following list gives some of its many aspects:
  - ✓ Consumer Behavior;
  - ✓ Producer Behavior;
  - ✓ Market Structure;
  - ✓ Resource Pricing;
  - ✓ Welfare Economics;
  - ✓ Choice Under Uncertainty, etc

- ✓ In preparing these lists of subareas, you should also consult others who have some knowledge of the area and the literature in your subject area.
- ✓ Once you have developed an exhaustive list of the sub areas from various sources, you proceed to the next stage where you select what will become the basis of your inquiry.

### ***Step 3: Select what is most interest to you.***

- ✓ It is neither advisable nor feasible to study all subjects.
- ✓ Out of this list, select issues or sub areas about which you are passionate.
- ✓ This is because your interest should be the most important determinant for selection, even though there are other considerations which have been discussed in the previous section, “considerations in selecting a research problem”.

- One way to decide what interest you most is to start with the process of elimination. Go through your list and delete all those sub areas in which you are not very interested.
- You will find that towards the end of this process, it will become very difficult for you to delete anything further.
- You need to continue until you are left with something that is manageable considering the time available to you, your level of expertise and other resources needed to undertake the study.
- Once you are confident that what you have selected you are passionate about and can manage, you are ready to go to the next step.

## **Step 4: *Raise Research questions.***

- ✓ At this step you ask your self, ‘what is it that I want to find out about in this sub area’?
- ✓ With in your chosen sub area, first list whatever question you want to find out answers to.
- ✓ If you find out yourself in a situation where you can think of many questions, too many to be manageable, again go through a process of elimination, as you did in step 3.

## **Step 5: *Formulate objectives.***

- ✓ Formulate your main and your specific objectives.
- ✓ Your objective grow out of your research questions.

- ✓ The main difference between your objectives and research questions is the way in which they are written.
- ✓ Research questions are obviously that-questions. Objectives transform these questions into behavioral aims by using action oriented words such as ‘to find out’, ‘to ascertain’ and ‘to examine’.
- Some researchers prefer to reverse the process; that is they start from the objectives and formulate research questions from them.
- Some researchers are satisfied only with research questions, and do not formulate objectives at all.
- If you prefer to have only research questions or only Objectives, this is fine, but keep in mind the requirements of your institution for research proposal!



## **Step 6: Asses your objectives.**

- ✓ Now examine your objectives to ascertain the feasibility of achieving them through your research endeavor.
- ✓ Consider them in the light of time, resources (financial and human) and technical expertise at your disposal.
- ✓ **Step 7: *Double-check*:**
- ✓ Go back and give final considerations to whether or not you are sufficiently interested in the study, and have adequate resources to undertake it.
- ✓ Ask your self, “Am I really enthusiastic about this study”, and “Do I really have enough resource to undertake it”? Answer these questions thoughtfully and realistically.
- ✓ If your answer to one of them is “no”, re-assess your objectives.

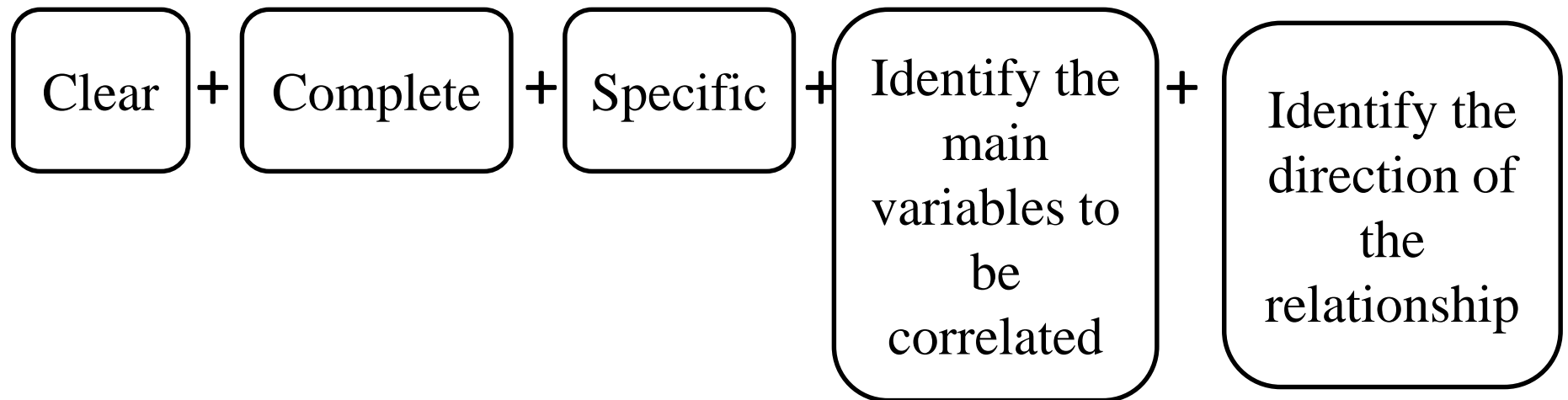
- Note that so far we have focused on the basis of your study, the *research problem*.
- But every study in social sciences has the second element, the *study population*, from whom the required information to find answers to your research questions is obtained.
- As you narrow the research problem, similarly you need to decide very specifically who constitutes your study population, in order to select the appropriate respondents.

# Formulation of Research Objectives

- Objectives are the goals you set out to attain in your study.
- Since these objectives inform a reader of what you want to achieve through the study, it is extremely important to word them clearly and specifically.
- Objectives should be listed under two headings:
  - ✓ Main objective;
  - ✓ Specific Objectives.
- The main objective is an over all statement of thrust of your study.
- It is also known as a statement of main associations and relationships that you seek to discover or establish.

- The sub objectives are the specific aspects of the topic that you want to investigate with in the main framework of your study.
- Sub objectives should be worded clearly and unambiguously.
- Make sure that each sub objective contains only one aspect of the study.
- Use action - oriented words or verbs when writing your objectives.
- The objectives should start with words such as ‘to determine’, ‘to find out’, ‘to ascertain’, ‘to measure’, and ‘to explore’.
- The way your main and specific objectives are worded determines how your research is classified (e.g. descriptive, correlation, analytical or experimental).

- In other words, the wording of your objectives determines the type of research design you need to adopt to achieve them.
- Hence, be careful about the way you word your objectives!
- *Irrespective of the type of research, the objectives should be expressed in such a way that the wording clearly, completely and specifically communicates to your readers your intention.*
- *There is no place for ambiguity, non-specificity or incompleteness, either in the wording of your objectives or in the ideas they communicate.*
- *The following figure displays the characteristics of the wordings of objectives in relation to the type of research study.*



Descriptive studies

Correlational studies

(experimental & non experimental)

Hypothesis – testing studies

- ✓ If your study is primarily descriptive, your main objective should clearly describe the major focus of your study, even mentioning the organization and its location unless these are kept confidential
- ✓ (e.g. to describe the opinion of students to wards the education service provided by...[name of organization] located in ...[name of the place]... or to find out the opinion of the community about the health services provided by...[name of the health center/department] in...[name of the place]...).
- ✓ *Identification of the organization and its location is important as the services may be peculiar to the place and the organization and may not represent the services provided by others to similar populations.*

- If your study is correlational in nature, in addition to the above three properties, the wording of the main objective should include the main variables being correlated
- (e.g. to ascertain the impact of migration of family roles or to find out the relationship between alcoholism and its impact on a family).
- If the overall thrust of your study is to test a hypothesis, the wording of main objectives, in addition to the above, should indicate the direction of the relationship being tested.
- (e.g. to ascertain if an increase in youth unemployment will increase the incidence of street crime, or to demonstrate that the provision of maternal and child health services to rural areas will reduce maternal and child Mortality).



# Illustration: Formulating a research problem

- ✓ Suppose you want to study the relationship between fertility and mortality.
- ✓ The following diagram gives the whole spectrum of the steps involved in formulation of a research problem
- ✓ Just have a look at it 😊

**Step 1: Identify Mortality and Fertility**

**Step 2: Dissect**

1. Trends in fertility and Mortality
2. Determinants of Fertility behavior
3. Relationship between fertility and mortality
4. Impact of health care on mortality
5. Impact of contraceptives in fertility behavior, etc.

**Step 4: Raise Questions**

1. What happens to fertility when mortality declines?
2. What is the time lag between the start of decline in mortality and the start of fertility?
3. What are the factors that contribute to the decline in fertility? Etc

**Step 3: Select Relationship between fertility and Mortality**

**Step 5: Formulation of Objectives**

**Main Objective:** To explore the relationship between fertility and mortality

**Specific Objectives:**

1. To find out the extent of the decline in fertility in relation to the extent of the decline in mortality
2. To ascertain the time lag between the decline in mortality and the decline in fertility
3. To identify the factors that affect the changes in fertility

**Step 6: Make sure**

Asses these objectives in the light of:

1. The works involved
2. The time available to you
3. The financial resource at your disposal
4. Technical expertise in the area

**Step 7: Double check**

1. That you are really interested in the study
2. That you have adequate resource
3. That you agree with the objectives
4. That you have the technical expertise to make the study

## 2.2. Research Hypothesis

- *The Definition of a Hypothesis*
- ✓ Another important consideration in the formulation of a research problem is the construction of hypothesis.
- ✓ Hypothesis brings clarity, specificity and focus to a research problem, but are not essential for a study.
- ✓ You can conduct a valid investigation without constructing a single formal hypothesis. On the other hand, with in the context of a research study, you can construct as many hypothesis as you consider to be appropriate.
- ✓ Some believe that one must formulate a hypothesis to undertake an investigation; however, many don't hold this opinion.

- Hypotheses primarily arises from a set of “hunches” that are tested through a study and one can conduct a perfectly valid study without having these hunches or speculations.
- However, to narrow the field of investigation, it is important to formulate hypothesis.
- ✓ The importance of hypothesis lies in their ability to bring direction, specificity and focus to a research study.
- ✓ In other words, hypothesis adds clarity, specificity and focus to a research study.
- ✓ They tell a researcher what specific information to collect, and thereby provide greater focus.

## *Question:* What is hypothesis then?

- ✓ Hypothesis is a hunch, assumption, proposition, speculation or an idea about a situation, phenomenon or relationship, the reality or truth of which you do not know (is not known).
- ✓ A researcher calls these assumptions, statements, or hunches hypotheses and they become the basis of an inquiry (investigation) and analysis.
- ✓ In most studies, the hypothesis will be based up on either previous studies or on your own or someone else's observation.
- ✓ (E.g.: Suppose you have a hunch that there are more smokers than non-smokers in a given class. To test your hunch, you ask either all or just some of the class if they are smokers. You can then conclude whether your hunch was right or wrong).

- As a researcher, you don't know about a phenomenon, a situation, the prevalence of a condition in a population or about the outcome of a program, but you do have a hunch to form the basis of certain or guess. You test these by collecting information that will enable you to conclude if your hunch was right.
- ✓ The verification process can have one of the three outcomes. Your hunch may prove to be:
  1. Right;
  2. Partially right; or
  3. Wrong
- ✓ Without this process of verification, you cannot conclude anything about the validity of your assumption.

- **Some more definition of hypothesis ☺**
  - ✓ A hypothesis is a conjectural statement of the relationship between two or more variables (*Kerlinger, 1986:17*).
  - ✓ A hypothesis is written in such a way that it can be proven or disproven by valid and reliable data-it is in order to obtain these data that we perform our study (*Grinnell, 1988*)
- In short, a hypothesis is a tentative statement about something, the validity of which is usually unknown.

## 2.2.1. The Characteristics of a hypothesis

- There are a number of considerations to keep in mind when constructing a hypothesis; as they are important for valid verification:
  - 1) **A hypothesis should be simple, specific and conceptually clear.**
    - ✓ There is no place for ambiguity in the construction of a hypothesis, as ambiguity will make the verification of your hypothesis almost impossible.
    - ✓ It should be uni-dimensional - that is, it should test only one relationship or hunch at a time.
    - ✓ To be able to develop a good hypothesis, you must be familiar with the subject area (the literature review is of immense help).



✓ The more insight you have into a problem, the easier it is to construct a hypothesis.

*e.g.1: The average age of the male students in this class is higher than that of the female students.*

✓ This hypothesis is clear, specific and easy to test.

➤ It tells you what you are attempting to compare (average age of this class), which population groups are being compared (female and male students), and what you want to establish (higher average age of the male students).

*e.g.2: Suicide rates vary inversely with social cohesion.*

✓ This hypothesis is clear and specific, but a lot more difficult to test.

- ✓ There are three aspects of this hypothesis: ‘Suicide rates’; ‘vary inversely’, which stipulates the direction of the relationship; and ‘social cohesion’.
- ✓ To find out the suicide rates and to establish whether the relationship is inverse or otherwise are comparatively easy, but to ascertain social cohesion is a lot more difficult.
- What determines social cohesion? How can it be measured? This problem makes it more difficult to test this hypothesis.

## 2) **A hypothesis should be capable of verification (i.e. It should be testable)**

- ✓ Methods and techniques must be available for data collection and analysis.
- ✓ There is no point in formulating a hypothesis if it cannot be subjected to verification because there are no techniques to verify it.

- ✓ However, this does not necessary mean that you should not formulate a hypothesis for which there are no methods of verification.
  - ✓ You might, in the process of doing your research, develop new techniques to verify it.
- 3) A hypothesis should be related to the existing body of knowledge.**
- ✓ It is important that your hypothesis emerges from the existing body of knowledge, and that it adds to it, as this is an important function of research.
  - ✓ This can only be achieved if the hypothesis has its roots in the existing body of knowledge.
  - ✓ A good hypothesis should also be in agreement with the observed facts.
  - ✓ A good hypothesis does not conflict with any law of nature, which is known to be true.

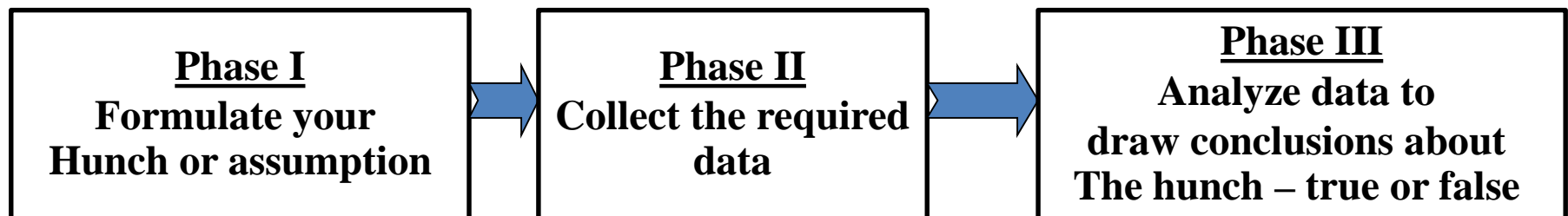
#### **4) A hypothesis should be operationalizable**

- ✓ This means that it can be expressed in terms that can be measured.
- ✓ If it cannot be measured, it cannot be tested and, hence, no conclusions can be drawn.

#### **5) A hypothesis have to be related to the research problem; the research questions and the research objectives in one way or the other!**

# The function of a hypothesis

- While some researchers believe that to conduct a study requires a hypothesis, having a hypothesis is not essential as already mentioned.
- However, a hypothesis is important in terms of bringing clarity to the research problem.



**Figure 1: The process of testing a Hypothesis**

- Specifically, a hypothesis serves the following functions:
  - ✓ The formulation of a hypothesis provides a study with focus. It tells you what specific aspects (or questions) related to the research problem (topic) to investigate.
  - ✓ A hypothesis gives you a direction as to what methods of data collection and analysis to use (i.e., what data to collect & what not to collect).
  - ✓ As it provides a focus to the study; the construction of a hypothesis enhances objectivity in a study.
  - ✓ A hypothesis may enable you to add to the formulation of theory. It enables you to specifically conclude what is true or what is false.

# Types of Hypothesis

- As explained, any assumption that you seek to validate through an inquiry is called a hypothesis.
  - Hence, theoretically there should be only one type of hypothesis, that is, the research hypothesis--the basis of your investigation.
  - However, because of the conventions in scientific inquiries and because of the wording used in the construction of a hypothesis, hypothesis can be classified in to several types.
- Broadly, there are two categories of hypothesis:
1. Research Hypothesis;
  2. Alternate hypothesis

- ✓ The main function of an alternate hypothesis is to explicitly specify the relationship that will be considered as true in case the research hypothesis proves to be wrong.
- In a way, an alternative hypothesis is the opposite of the research hypothesis.
- ✓ Again, it is also a convention to state the alternate hypothesis as a “null hypothesis” or “hypothesis of no difference”.

e.g.: Suppose you want to study the smoking pattern in a community in relation to gender differentials. The following hypothesis could be constructed:

- 1) There is no significant difference in the proportion of male and female smokers in the study population



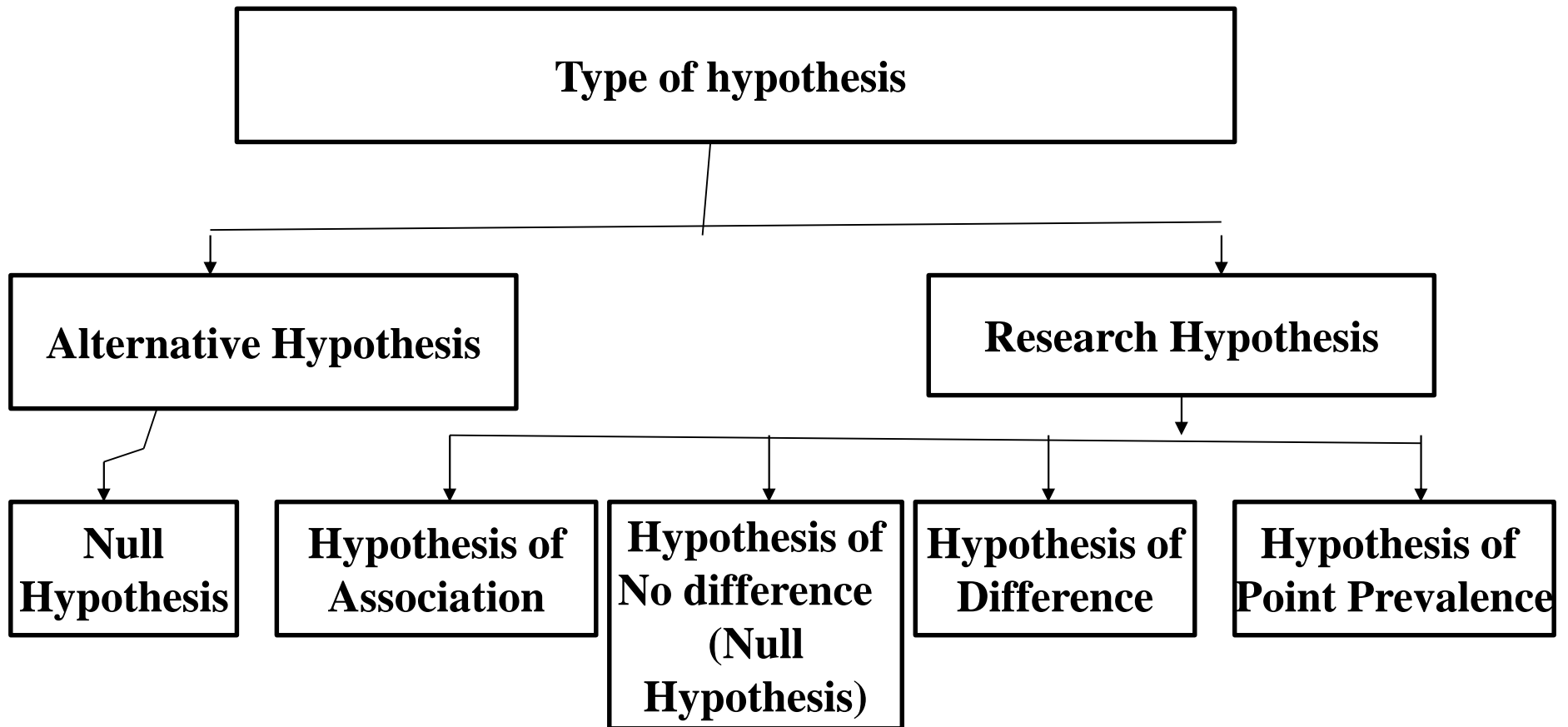
- 2) A greater proportion of females than males are smokers in the study population.
  - 3) A total of 60% of females and 30% of males in the study population are smokers.
  - 4) There are twice as many female smokers as males in the study population.
- ✓ Generally Speaking, based on the wording / formulation / construction; a hypothesis is further classified as below based on the above example!
  - the way the first hypothesis has been formulated indicates that there is no difference in the proportion of male and female smokers.

- ✓ When you construct a hypothesis stipulating that there is no significance between two situations, groups, outcomes, or the prevalence of a condition or phenomenon, this is called a *null hypothesis* and is usually written as  $H_0$ .
- ✓ The second hypothesis implies that there is a difference in the proportion of male and female smokers among the population, though the extent of the difference is not specified.
- ✓ A hypothesis in which a researcher stipulates that there will be a difference but does not specify its magnitude is called a **hypothesis of difference**.
- ✓ A researcher may have enough knowledge about the smoking behavior of the community to stipulate almost the exact prevalence of the situation in quantitative units.

- ✓ Examine the third hypothesis in the given example: the proportion of female and male smokers is 60 and 30 percent respectively. This type of hypothesis is known as a **hypothesis of point- prevalence**.
- The fourth hypothesis in the given example speculates the relationship between the prevalence of a phenomenon (Smoking) in different population groups ('twice as many female as male smokers').
  - This type of hypothesis is called a **hypothesis of association**.
- There may be some confusion about null and research hypothesis, as in the figure below; the null hypothesis is also classified as hypothesis of no difference under 'research hypothesis'.

- Any type of hypothesis, including a null hypothesis, can become the basis of an inquiry.
- Note: When a null hypothesis become the basis of an investigation, it becomes a research hypothesis.

# Types of Hypothesis...



*Figure 2: Types of Hypothesis*

## Errors in testing a hypothesis

- ✓ As already mentioned, a hypothesis is an assumption they may prove to be either correct or incorrect.
- ✓ It is possible to arrive at an incorrect conclusion about a hypothesis for a variety of reasons.
- Incorrect conclusions about the validity of a hypothesis may be drawn if:
  - ✓ The study design selected is faulty;
  - ✓ The sampling procedure adopted is faulty;
  - ✓ The method of data collection is inaccurate;
  - ✓ The analysis is wrong;
  - ✓ The statistical procedures applied are inappropriate; or
  - ✓ The conclusions drawn are incorrect.

- ✓ *Any, some or all of these aspects of the research process could be responsible for the inadvertent introduction of error in your study, making **conclusions misleading**.*
- *Hence; in the testing of a hypothesis, there is always the **possibility of errors attributable to the reasons identified above**.*
- ❖ *What any researcher wants is to be right!*
- *They want to discover that there is an association between two variables: say, asthma and traffic pollution, but only if such an association really exists.*
- *If there is no such association, then they want their study to support the null hypothesis that the two are not related. (While the former may be more exciting, both are important findings)*

- ❖ *What no researcher wants is to be wrong!*
- *No-one wants to find an association which does not really exist, or - just as importantly - not find an association which does exist.*
- *Both such situations can arise in any piece of research. The first (finding an association which is not really there) is called a Type I error.*
  - *It is the error of falsely rejecting a true null hypothesis.*
- *(An example would be a study which rejects the null hypothesis that there is no association between ill-health and deprivation.*
  - *The findings suggest such an association, but in reality, no such relationship exists.)*



- *The second kind of error, called a Type 2 error (usually written as Type II), occurs when a study fails to find an association which really does exist.*
  - *It is then a matter of wrongly accepting a false null hypothesis.*
  - *(Using the ill-health and deprivation example again, we conduct a study and find no association, missing one which really does exist.)*
- ❖ *Both types of error are serious.*
  - *Both have consequences: imagine the money which might be spent on reducing traffic pollution, and all the time it does not really affect asthma (a Type I error).*

- *Or imagine allowing traffic pollution to continue, while it really is affecting children's health (a Type II error).*
- ❖ *Good research will minimize the chances of committing both Type I and Type II errors as far as possible, although they can never be ruled out absolutely.*
- *The figure below shows the types of errors that can result in the testing of a hypothesis:*

When your Decision is to:		When a null hypothesis is actually:	
		True	False
	Accept	Correct Decision	Type II Error
	Reject	Type I Error	Correct Decision

Table 2: Type I and Type II errors in testing a hypothesis

- ✓ Hence in drawing conclusions about a hypothesis, two types of errors can occur:
  - ✓ Rejection of a null hypothesis when it is true. This is known as a *type I error*
  - Acceptance of a null hypothesis when it is false. This is known as a *type II error*.

## 2.2.2. Difficulties (Limitations) of the tests of hypotheses

- ✓ There are several limitations that are associated with the tests of a hypothesis which should always be borne in mind by a researcher.
- Important limitations are as follows:
  - 1) The tests should not be used in a mechanical fashion. It should be kept in view that testing is not decision-making itself; the tests are only useful aids for decision-making.
  - Hence “proper interpretation of statistical evidence is important to intelligent decisions.”
  - 2) Test do not explain the reasons as to why does the difference exist, say between the means of the two samples.
  - The tests do not tell us as to which is/are the reason(s) causing the difference.

- 3) Results of significance tests are based on probabilities and as such cannot be expressed with full certainty.
- When a test shows that a difference is statistically significant, then it simply suggests that the difference is probably not due to chance.
- 4) Statistical inferences based on the significance tests cannot be said to be entirely correct evidences concerning the truth of the hypotheses.
- This is specially so in case of small samples where the probability of drawing erring inferences happens to be generally higher.
  - For greater reliability, the size of samples be sufficiently enlarged.

- All these limitations suggest that in problems of statistical significance, the inference techniques (or the tests) must be combined with adequate knowledge of the subject-matter along with the ability of good judgment.

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# **CHAPTER THREE**

# **RESEARCH DESIGN**

Compiled : By Ataklti Zereu



## 3.1 Definition

- ✓ The formidable problem that follows the task of defining the research problem is the preparation of the design of the research project, popularly known as the “research design”.
- Decisions regarding what, where, when, how much, by what means concerning an inquiry or a research study constitute a research design.
- “A research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure.”

- ✓ In fact, the research design is the conceptual structure within which research is conducted;
- ✓ It constitutes the blueprint for the collection, measurement and analysis of data.
- ✓ The design includes an outline of what the researcher will do from writing the hypothesis and its operational implications to the final analysis of data.
- ✓ More explicitly, the design decisions happen to be in respect of:
  - What is the study about?
  - Why is the study being made?
  - Where will the study be carried out?
  - What type of data is required?

- Where can the required data be found?
- What periods of time will the study include?
- What will be the sample design?
- What techniques of data collection will be used?
- How will the data be analysed?
- In what style will the report be prepared?
- Keeping in view the above stated design decisions, one may split the overall research design into the following parts:
  - (a) The sampling design which deals with the method of selecting items to be observed for the given study;*
  - (b) The observational design which relates to the conditions under which the observations are to be made;*

***(c) The statistical design*** which concerns with the question of how many items are to be observed and how the information and data gathered are to be analysed; and

***(d) The operational design*** which deals with the techniques by which the procedures specified in the sampling, statistical and observational designs can be carried out.

- From what has been stated above, we can state the important features of a research design as under:
  - (i) It is a plan that specifies the sources and types of information relevant to the research problem.
  - (ii) It is a strategy specifying which approach will be used for gathering and analysing the data.
  - (iii) It also includes the time and cost budgets since most studies are done under these two constraints.

## 3.2 Components of Research Design

- In brief, research design must, at least, contain:
  - (a) a clear statement of the research problem;
  - (b) procedures and techniques to be used for gathering information;
  - (c) the population to be studied; and
  - (d) methods to be used in processing and analysing data.
- *Particularly, the research component has to:*
  - ✓ Define the information needed.
  - ✓ Design the exploratory, descriptive, and/or causal phases of the research.

- ✓ Specify the measurement and scaling procedures.
- ✓ Construct and pretest a questionnaire (interviewing form) or an appropriate form for data collection.
- ✓ Specify the sampling process and sample size.
- ✓ Develop a plan of data analysis.

## 3.3 Selecting Study Design

- Here, we will discuss the most commonly used study designs
- The various designs have been classified by examining them from three different perspectives:
  1. The number of contacts with the study population;
  2. The reference period of the study;
  3. The nature of the investigation
- These perspectives are arbitrary bases of classifications, hence, the terminology used to describe them is not universal.

- Note that the designs within each classification category are mutually exclusive; i.e.:
  - If a particular study is cross-sectional in nature, it can not be at the same time a before-and –after or a longitudinal study.
  - But, it can be a non-experimental or experimental, as well as a retrospective or a prospective study



### 3.3.1 Study design based on the number of contacts

- Based on the number of contacts with the study population, designs can be classified into three groups:
  - i. Cross-Sectional Studies;
  - ii. Before-and –after studies;
  - iii. Longitudinal studies
- i. The Cross- Sectional Study design**
  - The cross-sectional studies are also known as one- shot or status studies
  - These are the most commonly used design in social sciences.
  - This design is best suited to studies aimed at *finding out the prevalence of a phenomenon, situation, problem, attitude or issue , by taking a cross section of the population.*

- ✓ These are cross-sectional with regard to both the study population and the time of investigation
  - ✓ Cross-sectional study is extremely simple in design.
  - You decide what you want to find out, identify the study population, select a sample (if you need to), and contact your respondents to find out the required information.
  - ✓ It would be the most appropriate for study of the following topics (areas):
    - The attitude of the study population towards foreign investment in Gambella, Ethiopia.
    - Determinants of students' academic performance at a given University.
- etc...

- As these studies involve only one contact with the study population, they are comparatively cheap to undertake and easy to analyze.
- *But their biggest disadvantage is that they can not measure change ( to measure change, it is necessary to have at least two data collection points – i.e., at least two cross – sectional studies, at two points in time, on the same population).*

## **ii. Before-and-after study design**

- The main advantage of the before-and after design (also known as the pre-test/Post-test design) is that it can measure change in a situation, phenomenon, issue, problem or attitude.
- It is the most appropriate design for measuring the impact or effectiveness of a program.

- ✓ A before-and –after design can be described as two sets of cross-sectional data collection points on the same population to find the change in the phenomenon or variable(s) between two points in time.
- The change is measured by comparing the difference in the phenomenon or variables before and after the intervention.
- ✓ A before-and –after study is carried out by adopting the same process as a cross-sectional study except that it comprises two cross-sectional observations, the second being undertaken after a certain period.
- ✓ Depending upon how it is set up, a before-and- after study may be either an experiment or a non-experiment.

- It is one of the most commonly used designs in evaluation studies.
- The difference between the two sets of data collection points with respect to the dependent variable is considered to be the impact of the program.

### **iii. Longitudinal Study Designs**

- The before-and- after study design is appropriate for measuring the extent of change in a phenomenon, situation, problem, attitude and so on, but is less helpful for studying the pattern of change.
- To determine the pattern of change in relation to time, a longitudinal design is used.
- Longitudinal data (also called panel data) are data for multiple entities in which each entity is observed at two more time periods.

- For example; when you wish to study the proportion of people adopting a program in relation to time.
- Longitudinal studies are also useful when you want to collect factual information on a continuing basis.
- For example you may want to ascertain the trends in the demand for labor, immigration, changes in the incidence of a disease or in the mortality, fertility patterns of a population, etc.
- In longitudinal studies, the study population is visited a number of times at regular intervals, usually over a long period, to collect the required information.
- These intervals are not fixed so their length may vary from study to study
- Intervals might be as short as a week or longer than a year
- Irrespective of the size of the interval, the information gathered each time is identical

- ✓ Although the data collected is from the same study population, it may or may not be from the same respondents.
- ✓ A longitudinal study can be seen as a series of repetitive cross – sectional studies.
- ✓ Longitudinal studies have the same disadvantages as before – and – after studies, in some instances to an even greater degree.
- ✓ In addition, longitudinal studies can suffer from the *conditioning effect*.
  - This describes a situation where, if the same respondents are contacted frequently, they begin to know what is expected of them and may respond to questions without thought, or they may lose interest in the inquiry, with the same result.

### 3.3.2 Study Designs based on the Reference Period

- The *reference period* refers to the time-frame in which a study is exploring a phenomenon, situation, event or problem.
- Studies with this perspectives are thus categorized as :
  - i. Retrospective
  - ii. Prospective
  - iii. Retrospective - Prospective



## **i. The retrospective study design**

- Retrospective studies investigate a phenomenon, situation, problem or issue that has happened in the past.
- They are usually conducted either on the basis of the data available for that period or on the basis of respondents' recall of the situation.
- For example: livelihood impact of land reform program by the Derge Regime in Ethiopia

## **ii. The Prospective Study Design**

- The prospective studies refer to the likely prevalence of a phenomenon, situation, problem, attitude or outcome in the future.
- Such studies attempt to establish the outcome of an event or what is likely to happen.

- Experiments are usually classified as prospective studies as the researcher must wait for an intervention to register its effect on the study population.
- E.g.: to measure the effects of a change in migration policy on the extent of immigration in a certain country.

### **iii. The Retrospective-Prospective study design**

- Retrospective –Prospective study design focus on past trends in a phenomenon and study it into the future .
- A study is classified under this category when you measure the impact of an intervention without having a control group.

- In fact, most before-and-after studies, if carried out without having a control – where the baseline is constructed from the same population before introducing the intervention – will be classified as retrospective-prospective studies.
- In a retrospective-prospective study, a part of the data is collected retrospectively from the existing records before the intervention is introduced and then the study population is followed to ascertain the impact of the intervention.
- Trend studies, which become the basis of projections, fall into this category.
- E.g.: the effect of an advertisement on the sale of a product.

### **3.3.3 Study designs based on the nature of the investigation**

- On the basis of the nature of the inquiry/investigation, studies can be classified as:

- Experimental
- Non-experimental
- Quasi or semi-experimental

#### **i. The Experimental Study Designs**

- There are so many types of experimental designs, but some of the common ones that we used in the Social sciences, Public health, Marketing, Education, etc are
  - The after –only design;
  - The before –and –after design;

- The control-group design;
- The double-control design;
- The comparative design;
- The ‘matched control’ experimental design;
- The placebo design

## **I. The after-only design**

- Here, the researcher knows that a population is being, or has been, exposed to an intervention and wishes to study its impact on the population
- In this design, information on baseline (pre-test or before observation) is usually ‘constructed’ on the basis of respondents’ recall of the situation before the intervention, or from information available in the existing records.

- The change in the dependent variable is measured by the difference between the ‘before’ (baseline) and ‘after’ observations.
- Technically, this is a very faulty design for measuring the impact of an intervention as there is no proper baseline data to compare the ‘after’ observation with.
- Therefore, one of the major problems of this design is that the two sets of data are not strictly comparable.
- Accordingly, some of the changes in the dependent variable may be attributable to the difference in the way the two sets of data were compiled.
- Another problem with this design is that it measures total change, including change attributable to extraneous variables; hence, it can not identify the net effect of the intervention.

- However, this design is widely used in impact assessment studies, as in real-life many programs operate without the benefit of a planned evaluation at the program planning stage (though this is fast changing) in which case it is just not possible to follow strictly the sequence – collection of baseline information, implementation of the program and then program evaluation.
- An evaluator therefore has no choice but to adopt this design.
- In practice, the adequacy of this design depends on having reasonably accurate data available about the prevalence of a phenomenon before the intervention is introduced.

## **II. The before-and-after design**

- This design overcomes the problem of retrospectively constructing the ‘before’ observation by establishing it before the intervention is introduced to the study population.
- Then, when the program has been completely implemented or is assumed to have had its effect on the population, the ‘after’ observation is carried out to ascertain the impact attributable to the intervention.
- The before-and-after design takes care of only one problem of the after-only design – that is the comparability of the before and after observations.



- It still does not enable to conclude that any change –in whole or in part–can be attributed to the program intervention.
- To overcome this, a ‘control’ group is used.
- The impact of the intervention in before-and-after design is calculated as follows:

[Change in dependent variable] = [status of the dependent variable at the ‘after’ observation] – [status of the dependent variable at the ‘before’ observation]

### **III. The control-group design**

- In here, the researcher selects two population groups instead of one: a Control group and an experimental group

- These groups are expected to be comparable as far as possible in every respect except the intervention;
  - Experimental group either receives or is exposed to the intervention, whereas the control group is not
- First, the ‘before’ observations are made on both groups at the same time
- The experimental group is then exposed to the intervention
- When it is assumed that the intervention has had an impact, an ‘after’ observation is made on both groups.
- Any difference in the ‘before’ and ‘after’ observations b/n the groups regarding the dependent variable(s) is attributed to the intervention.

- Thus, the impact of any intervention is equal to the difference in the ‘before’ and ‘after’ observations in the dependent variable between the experimental and control groups.
- It is important to remember that the chief objective of the control group is to quantify the impact of extraneous variables. This helps you to ascertain the impact of the intervention only.

#### **IV. The comparative design**

- If you want to compare the effectiveness of different treatment modalities, comparative design is appropriate.

- Comparative design can be carried out either as an experimental or as a non-experimental.
- In the comparative experimental design, the study population is divided into the same number of groups as the number of treatments to be tested
- For each group, the baseline with respect to the dependent variable is established
- The different treatment models are then introduced to the different groups
- After a certain period, when it is assumed that the treatment models have had their effect, the ‘after’ observation is carried out to ascertain any change in the dependent variable.

- The degree of change in the dependent variable in the different population groups is then compared to establish the relative effectiveness of the various interventions.
- In the non-experimental form of comparative design, groups already receiving different interventions are identified, and only the post-observation with respect to the dependent variable is conducted.
- The pre-test observation is constructed either by asking the study population in each group to recall the required information relating to the period before the introduction of the treatment or by extracting such information from existing records.
- Sometimes, a pre-test observation is not constructed at all, on the assumption that if the groups are comparable the baseline must be identical.

- As each group is assumed to have the same baseline, the difference in the post-test observation is assumed to be because of the intervention.
- To illustrate this, imagine you want to compare the effectiveness of three teaching models (A, B, & C) on the level of comprehension of students in a class:
- To undertake the study, you divide the class into three groups (X, Y & Z), through randomization, to ensure their comparability.
- Before exposing these groups to the teaching models, you first establish the baseline for each group's level of comprehension of the chosen subject.
- You then expose each group to a different teaching model to teach the chosen subject.

- Afterwards, you again measure the groups' levels of comprehension of the material.
- Suppose  $X_a$  is the average level of comprehension of group X before the material is taught, and  $X_a'$  is this group's average level of comprehension after the material is taught.
- The change in the level of comprehension,  $X_a' - X_a$ , is therefore attributed to model A.
- Similarly, changes in group Y and Z,  $Y_b' - Y_b$ , and  $Z_c' - Z_c$ , are attributed to teaching models B and C respectively.
- The changes in the average level of comprehension for the three groups are then compared to establish which teaching model is the most effective.

- (Note that extraneous variables will affect the level of comprehension in all groups equally, as they have been formed randomly.
- It is also possible to set up this study as a non-experimental one, simply by exposing each group to the three teaching models, following up with an ‘after’ observation.
- The difference in the levels of comprehension is attributed to the difference in the teaching models as it is assumed that the three groups are comparable with respect to their original level of comprehension of the topic.



## **V. The matched –control experimental design**

- comparative groups are usually formed on the basis of their overall comparability with respect to a relevant characteristics such as socio-economic status of the study population.
- In matched studies, comparability is determined on an individual-by –individual basis
- Two individuals from the study population who are almost identical with respect to a selected characteristics such as age, gender or type of illness are matched and then each is allocated to different group (the matching is usually done on an easily identifiable characteristics).

- In the case of a matched-control experiment, once the two groups are formed, the researcher decides through randomization or otherwise which group is to be considered control, and which, experimental.
- The matched design can pose a number of problems:
  - ✓ Matching increases in difficulty when carried out on more than one variable.
  - ✓ Matching on variables that are hard to measure, such as attitude or opinion, is extremely difficult.
  - ✓ Sometimes it is hard to know which variable to choose as a basis for matching. You may be able to base your decision upon previous findings or you may have to undertake a preliminary study to determine your choice of variable.

- Matching groups are most commonly used in the testing of new drugs.
- Patients are matched on certain characteristics (type of illness, age or gender) to form pairs.
- The individuals forming each pair are then allocated to two different groups. On a random basis, one is provided with the treatment and the other is considered a control.

## **VI. The ‘Placebo’ Design**

- A patient’s belief that she is receiving treatment can play an important role in his/her recovery from an illness even if treatment is ineffective.
- This psychological effect is known as the *placebo effect*.

- *A placebo design attempts to determine the extent of this effect.*
- *A placebo design involves two or three groups, depending on whether or not the researcher wants to have a control group*
- *If the researcher decides to have a control group, the first group receives the treatment, the second receives the placebo treatment , and the third (i.e., the control group) receives nothing.*
- *The decision as to which group will be the treatment, the placebo or the control group can also be made through randomization.*

## 3.4 Related literature review

### WHAT IS LITERATURE REVIEW?

- Literature review is an account of what has been published on a topic by **accredited scholars and researchers**.
- When you undertake a research study, using the existing body of knowledge in order to:
  - Elaborate more your research problem (issue);
  - Review what has been done on the issue so far;
  - Identify the weak and strong sides of previous research works; is imperative and indicating or doing these tasks in a research process, in a research terminology is called "Literature Review" or "Review of Literature" or "Related Literature" or some other similar concept.

- One of the essential preliminary tasks when you undertake a research study is to go through the existing literature in order to acquaint yourself with the available body of knowledge in your area of interest.
- The literature review is an integral part of the entire research process and makes a valuable contribution to almost every operational step.
- It has value even before the first step, that is, when you are merely thinking about a research question that you may want to find answers through your research journey.

- In the initial stages of research, it helps you to establish the theoretical roots of your study, and clarify your ideas and develop your methodology, but later on the literature review serves to enhance and consolidate your knowledge base and helps you to integrate your findings with the existing body of knowledge.
- Since an important responsibility in research is to compare your findings with those of others, it is here that the literature review plays an important role.
- Meaning during the write-up of your report, it helps you to integrate your findings with existing knowledge – that is, to either support or contradict earlier researches.

- To accomplish this, that Literature review must not be just a descriptive list of the materials available, or a set of summaries.
- Instead literature review uses available documents (both published and unpublished) on the topic, which contain information, ideas, data and evidence written from a particular standpoint [*particularly of our interest*] to fulfill certain aims [*particularly related to ours*] or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to the research being proposed (Hart, 1995: 13).
- Reviewing literature can be time- consuming, daunting and frustrating, but it is also rewarding.



# Functions (importance) of literature review

- A literature review has a number of functions:
  1. It provides a theoretical background to your study
    - ✓ Examining the literature can be a never-ending task, but as you may have limited time, it is important to set parameters by reviewing the literature in relation to some main themes pertinent to your research topic.
    - ✓ As you start reading the literature, you will soon discover that the problem you wish to investigate has its roots in a number of theories that have been developed from different perspectives.
    - ✓ You will also realize that the literature deals with a number of aspects that have a direct or indirect bearing on your research topic. Use this aspect as a basis of your theoretical framework.

- ✓ Moreover, if the researcher is interested to test hypotheses or to raise research questions, the research hypothesis or the research questions should emanate (at least related to) from the available body of knowledge, theory or concept.
  - ✓ If the otherwise is the case, the research hypotheses or the research questions may not command universal unanimous acceptance.
2. It reviews the means by which you establish the links between what you are proposing to examine and what has already been studied. In other words, it helps you to refine your research methodology.

- Going through the literature review acquaints you with the methodologies that have been used by others to find answers to research questions similar to the one you are proposing to investigate.
- Because a literature review tells you if others have used procedures and methods similar to the ones that you are proposing, which procedures and methods have worked well for others and what problems they have faced with them.
- By becoming aware of any problems and pitfalls, you will be better positioned to select a methodology that is capable of providing valid answers to your research questions.
- This will increase your confidence in the methodology you plan to use and will equip you to defend its use.

3. Through the literature review, you are able to show how your findings have contributed to the existing body of knowledge in your profession

- Reviewing of what has been done so far about an issue and what questions have been asked about those research questions that are the focus of the study enables the researcher to raise his own research questions and avoids duplication.
- At the end of the day, doing this results your research to contribute a lot in your field of specialization.

4. It enables you to contextualize your findings.

- Obtaining answer to your research questions is comparatively easy; the difficult part is examining:
  - how your findings fit in to the existing body of knowledge?
  - How do answers to your research questions compare with what others have found?
  - What contribution have you been able to make to the existing body of knowledge?
  - How are your findings different from those of others?
- For you to be able to answer these questions, you need to go back to your literature review.
- It is important to place your findings in the context of what is already known in your field of inquiry.

- It also helps you to:
  - bring clarity and focus to your research problem
  - Improve your methodology
  - Broaden your knowledge base in your research area
  - Contextualize your findings

### **3.4.2 Procedure of Reviewing the Literature**

- If you do not have a specific research problem, you should review the literature in your broad area of interest with the aim of gradually narrowing down to what you want find out about.
- After that the literature review should be focused around your research problem

- ***Remember!*** There is a danger in reviewing the literature without having a reasonably specific idea of what you want to study.
- It can condition your thinking about your study and the methodology you might use, resulting in a less innovative choice of research problem and methodology than otherwise would have been the case.
- Hence, you should try to conceptualize your research problem before undertaking your major literature review
- Advisable to follow the next four steps in conducting a literature review:

## *1. Search for existing literature in your area of study*

- To effectively search for literature in your field of inquiry, it is imperative that you have in mind at least some idea:
  - ✓ of the broad subject area and
  - ✓ of the problem you wish to investigate, in order to set parameters for your search.
- Next, compile a bibliography for this broad areas
- There are two sources that you can use to prepare a bibliography:
  - Books : the best way to search for a book is to look at your library catalogues , ask a librarian to help you to find the best subject heading for your area



- Journals : there are several sources designed to make your search for journals easier and these can save you enormous time.
- They are:
  1. Indices of journals (e.g . Humanities Index)
  2. Abstracts of Articles (e.g ERIC)
  3. Citation Indices(e.g Social Sciences Citation Index) ; *All these are accessible on the online internet*

## ***2. Review the literature selected***

- Now you have identified several books and articles as useful.

- The next step is to start reading them critically to pull together *themes* and *issues* that are associated.
- If you don't have a theoretical framework of themes in mind to start with, use separate sheet of paper for each article or book
- Once you develop a rough framework, slot the findings from the material so far reviewed into the framework using a separate sheet of paper for each theme of that framework.
- In doing so, read critically with particular references to the following aspects:
  - ✓ Note whether the knowledge relevant to your theoretical framework has been confirmed beyond doubt

- ✓ Note the theories put forward, the criticism of these and their basis, the methodologies adopted (study design, sample size, and its characteristics, measurement procedures, etc. ) and the criticisms of them.
- ✓ Examine to what extent the findings can be generalized to other situations.
- ✓ Notice where there are significant differences of opinion among researchers and give your opinion about the validity of these differences.
- ✓ Ascertain the areas in which little or nothing is known – the gaps that exist in the body of knowledge.

### **3. Develop a theoretical framework**

- Reviewing a literature is a never-ending task
- But as you have limited time, it is important to set parameters by reviewing the literature in relation to some main themes pertinent to your research topic.
- As you start reading the literature, you will soon discover that the problem you wish to investigate has its roots in a number of theories that have been developed from different perspectives.
- The information obtained from different books and journals now needs to be sorted under the main themes and theories:
  - highlighting agreements and disagreements among the authors and identifying the unanswered questions or gaps.

- You will also realize that the literature deals with a number of aspects that have a direct or indirect bearing on your research topic.
  - Use these aspects as a basis for developing your theoretical framework
  - Your review of the literature should sort out the information, as mentioned earlier, within this framework.
  - Unless you review the literature in relation to this framework, you will not be able to develop a focus in your literature search: i.e., your theoretical framework provides you with a guide as you read.
  - This brings us to the ‘Paradox’

- The Paradox is: until you go through the literature, you can not develop a theoretical framework and until you have developed a theoretical framework, you cannot effectively review the literature.
- The solution is to read some of the literature then attempt to develop a framework, even a loose one, within which you can organize the rest of the literature you read.
  - As you read more about the area, you are likely to change the framework.
  - However, without it, you will get bogged down in a great deal of unnecessary reading and note-taking that may not be relevant to your study.

- For instance, if you want to study the relationship between mortality and fertility, you should review literature about:
  - ✓ **Fertility**-trends, theories, some of the indices and critiques of them, factors affecting fertility, methods of controlling fertility, factors affecting acceptance of contraceptives, and so on;
  - ✓ **Mortality**-factors affecting mortality, mortality indices and their sensitivity in measuring change in mortality levels of a population, trends in mortality, and so on; and, most importantly
  - ✓ **The relationship between fertility and mortality-theories** that have been put forward to explain the relationship between mortality and fertility, implications of the relationship.

- Out of this literature review, you need to develop the theoretical framework for your study.
- Primarily this should revolve around theories that have been put forward about the relationship between mortality and fertility.
- You will discover that a number of theories has been proposed to explain this relationship.
- For example, it has been explained from economic, religious, medical and psychological perspectives.
- Within each perspective, several theories have been put forward: ‘insurance theory’, ‘fear of non-survival’, ‘utility theory’, etc.



## **4. Develop a conceptual framework**

- the conceptual framework stems from the theoretical framework and concentrates, usually, on one section of that theoretical framework which becomes the basis of your study.
- The theoretical framework consists of the theories or issues in which your study is embedded, whereas the conceptual framework describes the aspects you selected from the theoretical framework to become the basis of your enquiry.
- The conceptual framework is the basis of your research problem.

- For instance, in the above example, the theoretical framework includes all the theories that have been put forward to explain the relationship between fertility and mortality.
- However, out of these, you may be planning to test only one, say, the fear of non-survival.
- Hence the conceptual framework grows out of the theoretical framework and relates to the specific research problem concerning the fear of non-survival theory.

## **Writing up (Note taking) the literature review**

- Now, all that remains to be done is to write about the literature you have reviewed.
- As mentioned in the previous discussion, the broad two functions of a literature review are:
  1. To provide a theoretical background to your study
  2. To enable you to contextualize your findings in relation to the existing body of knowledge in addition to refining your methodology.
- The content of your literature review reflects these two purposes. In order to fulfill the first purpose, you identify and describe various theories relevant to your field; and specify gaps in existing knowledge in the area; recent advances in the area of study; current trends and so on.

- In order to comply with the second function you integrate your results with specific and relevant findings from the existing literature by comparing the two for confirmation or contradiction.
- While reading the literature for theoretical background of your study, you will realize that certain themes have emerged.
- List the main ones, converting them in to subheadings.
- These subheadings should be precise, descriptive of the theme in question, and follow a logical progression.
- Now, under each subheading, record the main findings with respect to the theme in question, highlighting the reasons for and against an argument if they exist, and identifying gaps and issues.

- Some people write up the entire literature review in one section, entitled ‘Review of the Literature’ or ‘The literature Review’, with out subheadings.
- However, it is strongly recommended to write your literature review under subheadings.
- The second broad function of the literature review- Contextualizing the findings of your study-requires you to very systematically compare your findings with those made by others.
- Quote from these to show how your findings contradict, confirm or add to them.
- It places your findings in the context of what others have found out. This function is undertaken when writing about your findings, that is, after analysis of your data.

- Below is given an example of ‘sample of outline of a literature review:
  - Topic: Inter country adoption in Western Australia  
(A profile of adoptive families)
- ✓ The literature was reviewed under the following themes:
  - Introduction (*Introductory remarks about adoption*)
  - History and philosophy of adoption
  - Reasons for adoption
  - Trends in adoption (*Global and National*)
  - History of inter country adoption in Western Australia
  - Trends of inter country adoption in Western Australia

- The adoption process in Western Australia
- Problems and issues in adoption
- Gaps in the literature (In this case it was a lack of information about those parents who had adopted children from other countries that become the basis of the study )

# Characteristics of a good literature review

- A good literature review should:
  - ✓ Be **organized** around and related to the research question you are developing.
  - ✓ **Synthesize** results into a summary of what is and is not known.
  - ✓ Identify **gaps** or areas of controversy in the literature.
  - ✓ Formulate **questions** that need further research.
- In short, a good literature review should have the following features:



- ✓ *Descriptive*
- ✓ *Critical* - A critical comparison of different approaches which points out any methodological flaws or gaps in research, inconsistencies in theory and findings, and areas or issues that need further study.
  - ✓ *Well-established knowledge gap*
- ✓ *Up-to-date* – it should be current
- ✓ *Extensive* – which means it should be a broad and comprehensive survey
- ✓ *Relevant* – it should be closely related to and well focused on the topic and the research problem you are investigating

✓ *Thorough* – it should be an in-depth survey of the major contributions of significant studies to the body of knowledge under review which identifies the trends, evidence, and conclusions in the relevant literature

## Proper citation style & plagiarism

- *What is plagiarism?*
- ✓ Plagiarism is the act of copying text or ideas from others and presenting them as one's own.
- ✓ Authors have 'intellectual property right' to their ideas and texts. Copying text and pasting it into one's own work is, therefore, considered theft.
- And theft, of course, is unethical and unacceptable.
- Some students do not realize that they commit plagiarism. Hence, they plagiarize in good faith.
- The following examples will teach you how you should cite your references correctly and avoid the crime.
- And please note that at a university, lack of awareness is no excuse for plagiarism.

## **A. Text based on other Authors' knowledge and Experience**

- **E.g.:** Consider an original text by Werner (1993: 12):

*The results of many rural development projects aiming to improve the living standards of the rural population in developing countries have often been disappointingly poor.*

1. You plagiarize Werner if you—*based on this text*—*write:*

*The results of many rural development projects aiming to improve the living standards of the rural population in developing countries have often been disappointingly poor.*

Why?

- Because:
  - ✓ (1) you copy the text without enclosing it in quotation marks, and
  - ✓ (2) you give no credit to the creator of the sentence (no reference).

2. You plagiarize if you write:

*According to Werner (1993: 12), the results of many rural development projects aiming to improve the living standards of the rural population in developing countries have often been disappointingly poor.*

Why?

- Because:

- ✓ you copy the text written by Warner without enclosing it in quotation marks.
  - By not using quotation marks, you falsely indicate that you have formulated Werner's message using your own words.

3. You plagiarize if you write:

*Many rural development projects aiming to improve the living standards of the rural population in developing countries have often had disappointingly poor effects.*

Why?

- Because:
  - ✓ (1) you still copy the text even if you paraphrase Werner's text by taking out '*the results of,*' replacing '*been*' by '*had,*' and adding '*effect*' and
  - ✓ (2) *because no reference is given.*

#### 4. You plagiarize if you write:

*Many rural development projects **meant** to improve the living **conditions** of the rural population in developing countries have often had **very** poor effects (Werner, 1993: 12).*

Why?

Because

- ✓ you still copy the text even if you paraphrase some more by replacing the word ‘*aiming*’ by ‘*meant*,’ the word ‘*standard*’ by ‘*condition*,’ and the word ‘*disappointingly*’ by ‘*very*.’ Werner’s sentence structure still remains.
- ✓ *Providing reference does not eliminate the need to express the idea in your own words (unless you use quotation marks).*

5. You plagiarize if you write:

*“The results of many rural development projects aiming to improve the living standards of the rural population in developing countries have often been disappointingly poor.”*

Why?

✓ Because no reference is given.

➤ The quotation marks clearly show that you cite another author, but whom?



6. You do not plagiarize if you write:

*“The results of many rural development projects aiming to improve the living standards of the rural population in developing countries have often been disappointingly poor”  
(Werner, 1993).*

Or

*According to Werner (1993), “the results of many rural development projects aiming to improve the living standards of the rural population in developing countries have often been disappointingly poor.”*

Why?

- Because
  - ✓ (1) you indicate that you present Werner’s idea by providing reference, and
  - ✓ (2) you show that you present Werner’s idea in his own words by enclosing the text in quotation marks.

## 7. You do not plagiarize if you write:

*The success rate of rural development projects in developing countries has generally been low. Attempts to raise the standard of living among rural poor have to a large extent not had the anticipated effects (Werner, 1993).*

Why?

- Because
  - ✓ (1) the statement is your own; you are the creator of the sentence, &
  - ✓ (2) you provide reference for the information on which you base your statement.

## **B. Text based on your own knowledge and experience**

8. Assume that you have lots of experience in implementing or studying development projects. You may write that:

*The success rate of rural development projects in developing countries has generally been low. Attempts to raise the standard of living among rural poor have to a large extent not had the anticipated effects.*

- You do not plagiarize anyone although you do not state your sources for this information.

- Why?
  - ✓ Listing all your sources might be impossible, and you may not know from where you got the information.
    - References are not needed when you express your accumulated, synthesized knowledge.
  - ✓ Also, you do not plagiarize Werner even if he made a similar statement earlier. Reference is only needed if his statement had a *significant influence on your understanding of the issue*.
- However, if your knowledge is based on one or a few sources, and you do not remember which ones, you should do a literature search to find them.
  - Poor memory is not an excuse for omitting references where references are appropriate.

9. Again, let us assume that you have lots of experience in implementing or studying development projects (as item 8). You may write that:

*The success rate of rural development projects in developing countries has generally been low. Attempts to raise the standard of living among rural poor have to a large extent not had the anticipated effects (e.g., Werner, 1993).*

➤ *The abbreviation ‘e.g.’ means ‘for example.’ By writing ‘e.g., Werner, 1993’ you indicate that you have obtained your information from several sources too numerous to list and that Werner (1993) is an example of your sources.*

10. Similarly to item 9, you may write:

*The success rate of rural development projects in developing countries has generally been low. Attempts to raise the standard of living among rural poor have to a large extent not had the anticipated effects (cf. Werner, 1993).*

- The abbreviation ‘cf.’ means ‘compare.’ The reference ‘*cf. Werner, 1993*’ states that the reader should compare your statement to that of Werner because he has expressed the same or a similar opinion. A reference like this is optional.

## C. Text based on Common Knowledge

11. You do not plagiarize if you write:

*The Earth is round.*

➤ ... without referring to Copernicus (1514)

*Or*

*Ethiopia is a country on the Horn of Africa.*

➤ ... without referring to a world atlas.

*Or*

*Water scarcity poses a serious limitation to agricultural production in semi-arid areas.*

➤ ... without referring to a publication documenting the fact.

➤ Why? Common knowledge does not need a reference. 190

- But what is ‘common knowledge’?
  - This is a difficult question. Even experts disagree on definitions.
    - You will have to make your own judgment. If in doubt, play it safe and cite your source.



## **Conceptualize your findings**

- Obtaining answers to your research questions is comparatively easy.
- The difficult part is examining how your findings fit into the existing body of knowledge
- How do answers to your research questions compare with what others have found?
- What contribution have you been able to make the existing body of knowledge?
- How are your findings differ from those of others?
- For you to be able to answer these questions, you need to go back to your literature
- It is important to place your findings in the context of what is already known in your field of inquiry

# Variables

**Definition:** the following are among the different definitions of variable:

- ✓ A concept that can be measured(explained in operational terms) is called **Variable**.
- ✓ A variable is a symbol to which numerals or values are attached
- ✓ variables can be classified into different categories from several points of view.
- ✓ The important ones are as under:
  - (i) ***Explanatory variable and criterion variable:***
    - ✓ *If X may be considered to be the cause of Y, then X is described as explanatory variable (also termed as causal or independent variable) and Y is described as criterion variable (also termed as resultant or dependent variable).*

- In some cases, both explanatory variable and criterion variable may consist of a set of many variables in which case set  $(X_1, X_2, X_3, \dots, X_p)$  may be called a set of explanatory variables and the set  $(Y_1, Y_2, Y_3, \dots, Y_q)$  may be called a set of criterion variables if the variation of the former may be supposed to cause the variation of the latter as a whole.
- In economics, the explanatory variables are called external or exogenous variables and the criterion variables are called endogenous variables.
- Some people use the term **external criterion** for **explanatory** variable and the term internal criterion for criterion variable.

**(ii) *Observable variables and latent variables:***

- ❖ Explanatory variables described above are supposed to be observable directly in some situations, and if this is so, the same are termed as observable variables.
- ❖ However, there are some unobservable variables which may influence the criterion variables.
- ❖ We call such unobservable variables as *latent variables*

**(iii) *Discrete variable and continuous variable:***

- ❖ *Discrete variable is the variable which when measured may take only the integer value whereas continuous variable is one which, when measured, can assume any real value (even in decimal points).*

**(iv) *Dummy variable (or Pseudo variable):***

- ❖ This term is being used in a technical sense and is useful in algebraic manipulations in context of multivariate analysis.
- ❖ We call  $X_i$  ( $i = 1, \dots, m$ ) a dummy variable, if only one of  $X_i$  is 1 and the others are all zero.

# Research Proposal

- ✓ All research endeavours in every academic and professional field are preceded by a research proposal
- ✓ It informs your academic supervisor or potential provider of a research contract of your conceptualization of the total research process that you propose to undertake, and examines its suitability and validity.
- ✓ In any academic field, your research proposal will go through a number of committees for approval.
- ✓ Unless it is approved, you will not be able to start your research.
- ✓ Hence, it is important for you to study closely what constitutes a research proposal.

- ✓ Certain requirements for a research proposal may vary from university to university, within a university from discipline to discipline, but what is outlined here will satisfy most requirements.
  - You should therefore be selective regarding what is needed in your situation.
- ✓ A research proposal is an overall plan, scheme, structure and strategy designed to obtain answers to the research questions or problems that constitute your research project.

# Importance of Research Proposal

- It should outline the various tasks you plan to undertake to fulfil your research objectives, test hypothesis or obtain answers to your research questions
- It should also state your reasons for undertaking the study.
- Broadly, a research proposal's main functions is to detail the operational plan for obtaining answers to your research questions
- In doing so it ensures and reassures the reader of the validity of the methodology for obtaining answers to your research questions accurately and objectively



- ✓ In order to achieve this function, a research proposal must tell you, your research supervisor and reviewers the following information about your study:
  - ✓ What you are proposing to do;
  - ✓ How you plan to proceed;
  - ✓ Why you selected the proposed strategy;

# Contents of a Research Proposal

- ❖ A research proposal should contain the following information about your study:
  - ❖ An introduction, including a brief literature review;
  - ❖ Theoretical framework that underpins your study;
  - ❖ Conceptual framework which constitutes the basis of your study;
  - ❖ Objectives or research questions of your study;
  - ❖ Hypothesis to be tested, if applicable;
  - ❖ Study design that you are proposing to adopt;
  - ❖ Setting for your study;
  - ❖ Research instrument(s) you are planning to use;

- ❖ Sampling design and sample size;
  - ❖ Ethical issues involved and how you propose to deal with them;
  - ❖ Data – processing procedure;
  - ❖ Proposed chapters of the report;
  - ❖ Problems and limitations of the study;
  - ❖ Proposed time-frame for the project
- ❖ Universities and other institutions may have different requirements regarding the style and content of a research proposal.
  - ❖ Requirements may also vary within an institution, from discipline to discipline or from supervisor to supervisor.
  - ❖ (The guidelines set out in this chapter therefore provide a framework within which a research proposal should be written.)

- Your proposal should follow the suggested guidelines and be written in an academic style
- It must contain appropriate references in *the body of the text and a bibliography at the end.*
- Your survey of the relevant literature should cover major publications on the topic.
- The theoretical frame for your study must emerge from this literature review and must have its grounding in empirical evidence.

# 1. Preamble/Introduction

- The proposal should start with an introduction to include some of the information listed below
  - Remember that some of the contents suggested in this section may not be relevant to certain studies; so use your discretion in selecting only what is pertinent to your study
- Here, the literature review is of central importance as it serves two main functions:
  - ✓ It acquaints you with the available literature in the area of your study, thereby broadening your knowledge base
  - ✓ It provides you with information on methods and procedures other people have used in similar situations and tells you what works and what does not

- The type, extent and quality of literature review are mostly dependent upon the academic level for which you are writing the proposal.
- The contents of this section may also vary greatly according to the subject area under study
- Start with a very broad perspective of the main subject area, before gradually narrowing the focus to the central problem under investigation
- In doing so, cover the following aspects of your study area:
  - ✓ An overview of the main area under study;
  - ✓ A historical perspective ( development, growth, etc) pertinent to the study area;
  - ✓ Philosophical or ideological issues relating to the topic;

- ✓ Trends in terms of prevalence, if appropriate;
- ✓ Major theories, if any;
- ✓ The main issues, problems and advances in the subject area under study;
- ✓ Important theoretical and practical issues relating to the central problem under study;
- ✓ The main findings relating to the core issue(s)

### **Example:**

1. *Suppose that you are conducting a study to investigate the impact of immigration on the family. The preamble/ introduction should include a brief description of the following :*
  - *The origins of the migratory movements in the world*

➤ *general theories developed to explain migratory behaviour*

➤ The reasons of migration

➤ Current trends in migration (national and state)

➤ The impact of immigration on family roles and relationships (e.g. on husband and wife, on children and parents, etc )

➤ Occupational mobility

➤ etc

2. *Suppose that you plan to study the relationship between academic achievement and social environment . The preamble would include the following:*

✓ The role of education in our society



- ✓ Major changes in the philosophy of education over time
  - ✓ Factors affecting attitudes towards education
  - ✓ The development of education in ....(country )
  - ✓ Trends in education participation rates in ...(country) with particular reference to the region in which the study is being carried out
  - ✓ Changing educational values
  - ✓ Role of parents and peers in academic achievement
  - ✓ Impact of social environment on academic achievement
- Etc...

## 2. Problem

- Having provided a broad introduction to the area under study, now:
  - ✓ focus on issues relating to its central theme,
  - ✓ Identify some of the gaps in the existing body of knowledge
  - ✓ Identify some of the main unanswered questions
    - Here some of the main research questions that you would like to answer through your study should also be raised and
    - A rationale for each should be provided
    - Knowledge gained from other studies and literature about the issues you are proposing to investigate should be an integral part of this section

- Specifically, this section should:
  - ✓ Identify the issues that are the basis of your study
  - ✓ Specify the various aspects of /perspectives on these issues
  - ✓ Identify the main gaps in the existing body of knowledge
  - ✓ Raise some of the main research questions that you want to answer through your study
  - ✓ Identify what knowledge is available concerning your questions, Specifying the differences of opinion in the literature regarding these questions if differences exist
  - ✓ Develop a rationale for your study with particular reference to how your study will fill the identified gaps

*E.g. 1:* Possible points which should be outlined under the section entitled ‘The problem’ from example 1 above are as under:

- ✓ What settlement process does a family go through after immigration?
- ✓ What adjustment do immigrants have to make?
- ✓ What types of change can occur in family members’ attitudes?
- ✓ What is the possible impact of settlement on family roles and relationships?
- ✓ In terms of impact, what specific questions do you want to answer through the study? What does the literature say about these questions?

- ✓ What are the different viewpoints on these issues?
- ✓ What are your own ideas about these questions
- ✓ What do you think will be the relevance of the findings of your study to the existing body of knowledge and to your profession?
- ✓ How will the findings add to the body of knowledge and be useful to professionals in your field? etc

*E.g. 1:* Possible points which should be outlined under the section entitled ‘The problem’ from example 2 above are as under:

- ❖ What theories have been developed to explain the relationship between academic achievement and social environment?

- ❖ What is the relationship between educational achievement and social environment: what theoretical model will be the basis of your study?
- ❖ What do previous theories and research have to say regarding the components of the theoretical model and academic achievement, for example the relationship between academic achievement and :
  - ❖ the self-esteem and aspirations/motivations of a student
  - ❖ Peer –group influences
  - ❖ Parental involvement and its relationship with their socioeconomic status
  - ❖ The motivation, and interest of students in the subject
  - ❖ Employment prospects
  - ❖ Relationship with a teacher
- Etc...

### 3. Objectives of the Study

- In here, explain both your study's *main* and *specific (specific) objectives*(see chapter 2 slide)
- *Your main objective indicates the central thrust of your study*
- *whereas the sub objectives(specific objectives) identify the specific issues you propose to examine*

*E.g.1: From example 1 above, the main objective could be:*

- ✓ *To ascertain the impact of immigration on the family*
- The sub objectives (the specific objectives) could be:
  - ✓ *To determine the impact of immigration on husband/wife roles as perceived by immigrants*

- ✓ To find out the impact of immigration on marital relations
- ✓ To ascertain perceived changes in parental expectations of children's academic and professional achievement
- ✓ To determine perceived changes of attitude towards marriage in the study population

*E.g.2: From example 2 above, the main objective could be:*

- ✓ To examine the relationship between academic achievement and social environment
- And the sub objectives (the specific objectives) could be:



- ✓ To find out the relationship, if any, between self-esteem and a student's academic achievement at school
- ✓ To ascertain the association between parental involvement in a student's studies and his/her academic achievement at school
- ✓ To examine the links between a student's peer group and academic achievement
- ✓ To explore the relationship between academic achievement and the attitude of a student towards teachers

## 4. Hypothesis to be tested

- A hypothesis is a statement of your assumptions about the prevalence of a phenomenon or about a relationship between two variables that you plan to test within the framework of the study (see slide in chapter two for details)
- If you are going to test hypothesis, list them in this section
- When formulating a hypothesis you have an obligation to draw conclusions about it in the text of the report
- Hypotheses have a particular style of formulation
- You must be acquainted with the correct way of wording them.

*E.g.1: From example 1 above, we can formulate the following hypotheses:*

- ✓ H1 = In most cases, there will be a change in husband/wife roles after immigration
- ✓ H2 = In a majority of cases there will be a change in parents' expectations of their children
- ✓ H3 = etc

*E.g.2: From example 2 above, we can formulate the following hypotheses:*

- ✓ H1 = A student's self-esteem and academic achievement at school are positively correlated
- ✓ H2 = The greater the parental involvement in a student's studies, the higher the academic achievement

- ✓ H3 = A student's attitude towards teachers is positively correlated with his/her academic achievement in that subject
- ✓ H4 = etc

## 5. Study design

- Describe the study design (for details read chapter) you plan to use to answer your research questions
- (For example, say whether it is descriptive, cross-sectional, before-and-after, experimental or non-experimental design)
- Identify the strengths and weaknesses of your study design
- Include details about the various logistical procedures you intend to follow while executing the study design.
- One characteristics of a good study design is that it explains the details with such clarity that, if someone else wants to follow the proposed procedure, s/he will be able to do exactly as you would have done.

- Your study design should include information about the following:
  - ✓ Who makes up the study population?
  - ✓ Can each element of the study population be identified? If yes, how?
  - ✓ Will a sample or the total population be studied?
  - ✓ How will you get in touch with the selected sample?
  - ✓ How will the sample's consent to participate in the study be sought?
  - ✓ How will the data be collected (e.g. By interview, questionnaire or observation)?
  - ✓ In the case of a mailed questionnaire, to what address should the questionnaire be returned?

- ✓ Are you planning to send a reminder regarding the return of questionnaires?
- ✓ How will confidentiality be preserved?
- ✓ How and where can respondents contact you if they have queries?

**E.g.1:** you can explain your study design of example number one above as below:

- *The study is primarily designed to find out from a cross-section of immigrants from Somalia, Eritrea and South Sudan the perceived impact of immigration on family roles. Initial contact with the ethnic associations for these countries will be made through the elected office bearers to obtain a list of members. Five immigrants will be selected from the list at random, and will be contacted by phone to explain the purpose of the study and its relevance, and to seek their agreement to participate in the study. Those who give their consent will be interviewed at their homes or any other convenient place. To select a further sample, a snowball sampling technique will be used until the desired sample size is obtained .*



## 6. The Setting

- Briefly describe the organization, agency or community in which you will conduct your study.
- If the study is about a group of people, highlight some of the salient characteristics of the group (e.g. Its history, size, composition and structure) and draw attention to any available relevant information.
- If your research concerns an agency, office or organization, include the following in your description:
  - ✓ The main services provided by the agency, office or organization
  - ✓ Its administrative structure
  - ✓ The type of clients served
  - ✓ Information about the issues that are central to your research

- If you are studying a community, briefly describe some of the main characteristics, such as:
  - ✓ The size of the community
  - ✓ A brief social profile of the community (i.e. the composition of the various groups within it)
  - ✓ Issues of relevance to the central theme of your study
- Note that due to the nature of the content, it would be difficult to give examples

## 7. Measurement Procedures

- This section contains a discussion of your instrument and the details of how you plan to operationalise your variables.
- To start with, justify your choice of research tool, highlighting its strengths and pointing out its weaknesses.
  - ✓ Then, outline the major segments of your research tool and their relevance to the main objectives of the study.
  - ✓ If you are using a standard instrument, briefly discuss the availability of evidence on its reliability and validity.
  - ✓ If you adapt or modify it in any way, describe and explain the changes you have made.

- You should also discuss how you are going to operationalise the major concepts. For example:
  - ❖ If measuring effectiveness, specify how it will be measured.
  - ❖ If you plan to measure the self-esteem of a group of people, mention the main indicators of self-esteem and the procedures for its measurement(e.g. the Likert or Thorstone scale, or any other procedure)
  - ❖ You should attach a copy of the research instrument to your proposal.

## 8. Ethical issues

- All academic institutions are particular about any ethical issues that research may have.
- To deal with them, all institutions have some form of policy on ethics.
- You need to be acquainted with your institution's policy
- It is imperative that you identify any ethical issues, and describe how you propose to deal with them in your proposal
- You need to look at the ethical issues particularly from the viewpoint of your respondents, and in case of any potential 'harm', psychologically or otherwise, you need to detail the mechanism in place to deal with it.

## 9. Sampling

- Here, you are supposed to include the following issues in your proposal:
  - ✓ The size of the sampling population( if known), and from where and how this information will be obtained
  - ✓ The size of the sample you are planning to select, and your reasons for choosing this size
  - ✓ An explanation of the sampling design you are planning to use in the selection of the sample( simple random sampling, stratified random sampling, quota sampling etc...)

***E.g.:*** the following issue is about sampling from example two above:

✓ *The selection of schools will be done primarily through quota sampling. Schools will be selected on the basis of their geographical proximity to the researcher. The researcher will prepare a list of schools, in rank order, of accessibility. Once two schools agree to participate in the study, negotiations with other schools will cease. All year nine male students will constitute the study population. It is expected that the sample will not exceed 100 students.*

## 10. Analysis of data

- In general terms, describe the strategy you intend to use for data analysis.
- Specify whether the data will be analyzed manually or by computer.
- For computer analysis, identify the main program and statistical procedure you plan to perform on the data.
- Identify the main variables for cross-tabulation

*E.g.1: Frequency distribution in terms of : age, education, occupation, number of children, duration of immigration etc*

- Cross-tabulation: impact of husband/wife: age , education, occupation, number of children, duration of immigration, etc



# 11. Structure of the report

- As clearly as possible, state how you intend to organize the final report
- In organizing your material for the report, the specific objectives of your study are immense help
- Plan to develop your chapters around the main themes of your study.
- The title of each chapter should clearly communicate the main thrust of its contents
- **Example 1:** it is proposed that the report. in example one above, will be divided into the following chapters

- ✓ Chapter 1: Introduction
- ✓ Chapter 2: the socioeconomic-demographic characteristics of the study population
- ✓ Chapter 3: the impact on husband/wife
- ✓ Chapter 4: the impact on marital relations
- ✓ Chapter 5: the impact on expectations of children
- ✓ Chapter 6: the impact on attitudes towards marriage
- ✓ Chapter 7: summary, conclusions and recommendations.

## **12. Problems and limitations**

- This section should list problems you thought you might encounter concerning, for example, the availability of data, securing permission from the agency or organization to carry out the study, obtaining the sample, the resources(time and finance ) etc.

## **13. Appendix**

- As an appendix, attach your research instrument and a list of references.

## 14. Work Schedule

- You must set yourself dates as you need to complete the research within a certain time-frame.
- List the various operational steps you need to undertake and indicate against each the date by which you aim to complete that task.
- Remember to keep some time towards the end as a ‘cushion’ in case the research process does not go as smoothly as planned.
- Develop a chart as the following table.



***Chapter Five:  
Data Colalection Techniques***

- ***Introduction***

- ✓ The task of data collection begins after a research problem has been defined and research design/plan chalked out.
- ✓ This chapter presents data collection methods that you may choose to be used in your research journey.
- ✓ The discussion of this chapter is essential as beginners of research because it is offered as a resource to help you decide which methods to include in your research plan.
- ✓ Therefore; in this chapter, we are going to discuss some methods of data collection that you may use in gathering data and we are going to discuss and consider some points in the process of deciding which data collection method is appropriate to use in each situation.



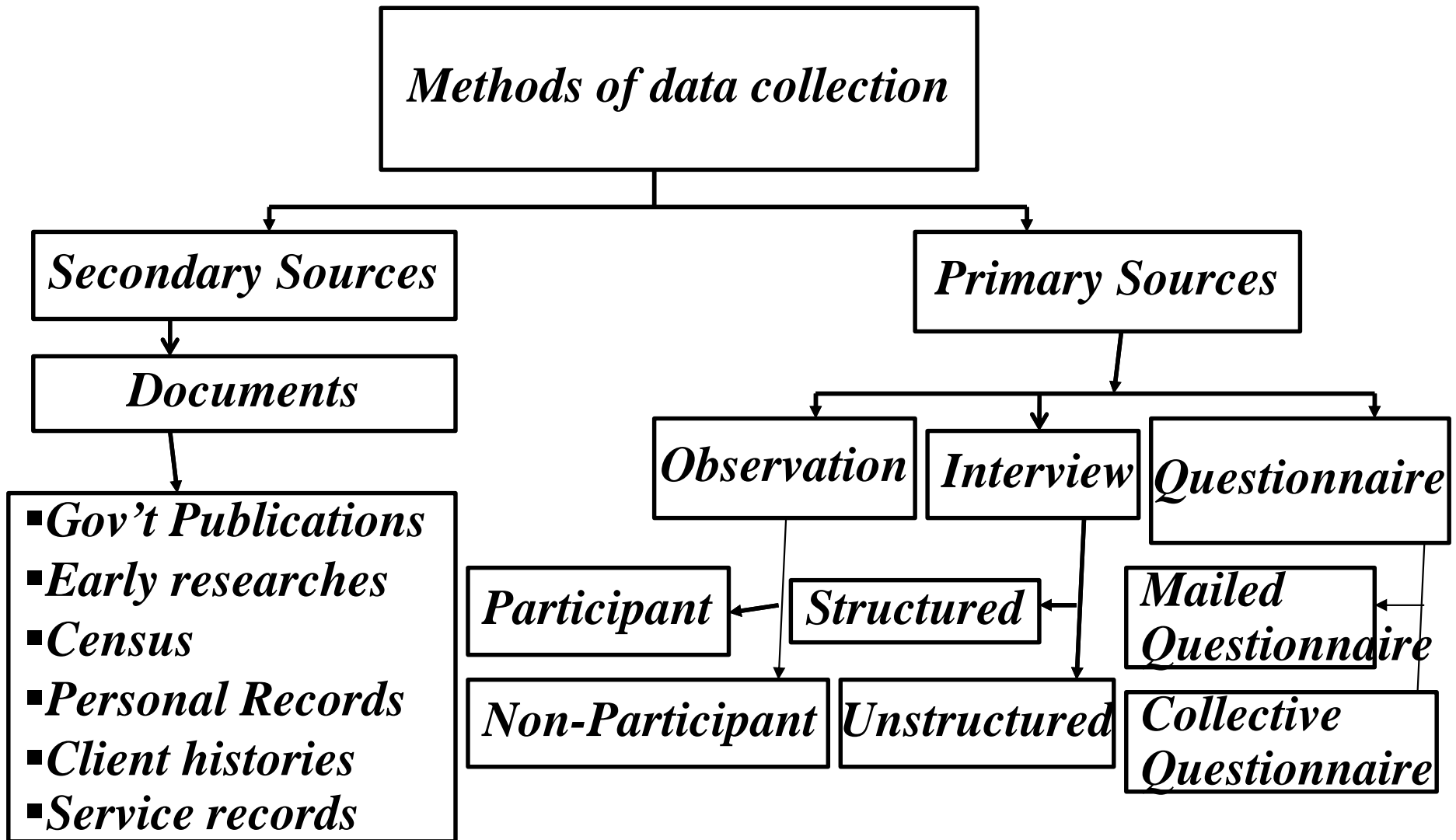
## *Methods of data collection*

### *(Classification of data)*

- There are two major approaches to gathering information about a situation, person, problem or phenomenon.
  - Sometimes, information required is already available and need only be extracted.
  - However, there are times when the information must be collected.
- ✓ Based upon these broad approaches to information gathering, data are categorized as:
  - 1) Secondary data;
  - 2) Primary data

- The data collected from secondary sources such as government publications, non-government organizations, previous research works, customer records, etc is called “Secondary Data”.
- The *secondary data* are those which have already been collected by someone else and which have already been passed through the statistical process.
- For instance: the use of census data to obtain information on the age – sex structure of a population; the use of hospital records to find out the morbidity and mortality patterns of a community; the use of an organization’s records to ascertain its activities; and the collection of data from sources such as articles, journals, Magazines, books and periodicals to obtain historical and other types of information are included under secondary sources of information.

- On the other hand, the data collected using primary source is called “Primary data”.
  - The *primary data* are those which are collected afresh and for the first time, and thus happen to be original in character.
  - For instance: finding out first-hand the attitudes of a community towards health services, ascertain the health needs of a community, evaluating a social program, determining the job satisfaction of the employees of an organization, and ascertaining the quality of services provided by a worker are examples of information collected from primary sources.
- There are three commonly used methods of collecting primary data: observation, questionnaire and interview.
- In summary, primary sources provide first-hand information and secondary sources provide second-hand data.



*Fig. 5.1 Methods of Data collection*

- ✓ None of the methods of data collection provides 100% accurate and reliable information.
- The quality of data gathered is dependent up on a number of other factors, which we will identify as we discuss each method.
- ✓ Moreover, your skill as a researcher lies in your ability to take care of the factors that could affect the quality of your data.
- One of the main differences between experienced and amateur researchers lies in their understanding of, and ability to control, these factors.
- It is therefore important for a beginner to be aware of them.

## *Collecting data using primary sources*

- Several methods can be used to collect primary data. The choice of a method depends up on the purpose of the study, the resource available and the skills of the researcher.
- There are times when the method most appropriate to achieve the objectives of the study cannot be used because of constraints such as a lack of resources and/or required skills.
- In such situations, you should be aware of the problems these limitations impose on the quality of the data.
- In selecting a method of data collection, the socio-demographic characteristics of the study population play an important role:

- You should know as much as possible about characteristics such as educational level, age structure, socio-economic status and ethnic background.
- If possible, it is helpful to know the study population's interest in, and attitude towards, participation in the study.
- Some population, for a number of reasons, may not feel either at ease with a particular method of data collection (such as being interviewed) or comfortable to express opinions in a questionnaire.
- Furthermore, people with little education may respond differently to certain methods of data collection compared to people with more education.

- Another important determinant of the quality of your data is the way the purpose and relevance of the study is explained to potential respondents.
  - Whatever method of data collection is used, make sure that respondents clearly understand the purpose and relevance of the study.
  - This is particularly important when you use a questionnaire to collect because in an interview situation you can answer a respondent's questions but in a questionnaire you will not have this opportunity.
- In the following sections each method of data collection is discussed from the point of view of its applicability and suitability to a situation, and the problems and limitations associated with it.



## *A. Observation*

- It is one way to collecting primary data.
- It is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place.
- The observation method is the most commonly used method specially in studies relating to behavioral sciences.
- In a way we all observe things around us, but this sort of observation is not scientific observation.
  - Observation becomes a scientific tool and the method of data collection for the researcher, when it serves a formulated research purpose, is systematically planned and recorded and is subjected to checks and controls on validity and reliability.

- In summary, when you are more interested in the behavior than in the perceptions of individuals, or when subjects are so involved in the interaction that they are unable to provide objective information about it, observation is the best approach to collect the required information.
- There are two types of observation: Participant and Non-Participant observations.
  1. Participant observation: is when you, as a researcher, participate in the activities of the group being observed in the same manner as its members, with or without their knowing that they are being observed.
- ✓ For instance, you might want to study the life of prisoners and pretend to be a prisoner in order to do this.

2. Non-Participant (disguised) Observations: On the other hand, is when you, as a researcher, do not get involved in the activities of the group, but remains a passive observer, watching and listening to its activities and drawing conclusions from this.
- For instance, you might want to study the functions carried out by nurses in a hospital.
    - As an observer, you could watch, follow, and record the activities as they are performed.
    - After making a number of observations, conclusions could be drawn about the functions nurses carry out in the hospital.
  - Observation method of data collection; however, is not free of problems.

- The following are some; among others:
  - ✓ When individuals or groups become aware that they are being observed, they may change their behavior.
    - Depending upon the situation, this change could be positive or negative – it may increase or decrease, for example, their productivity – and may occur for a number of reasons.
    - The use of observation in such a situation may introduce distortion:
      - What is observed may not represent their normal behavior.
  - ✓ There is always the possibility of observer bias:

- If an observer is biased, s/he can easily introduce bias and there is no easy way to verify the observations and the inferences drawn from them.
- ✓ The interpretations drawn from observations may vary from observer to observer.
- ✓ There is the possibility of incomplete observation and/or recording, which varies with the method of recording.
  - An observer may watch keenly but at the expense of detailed recording.
  - The opposite problem may occur when the observer takes detailed notes but in doing so misses some of the interaction.

## *B. The interview*

- Interviewing is a commonly used method of collecting information from people.
- In many walks of life, we collect information through different forms of interaction with others.
- Any person-to-person interaction between two or more individuals with a specific purpose in mind is called an interview.
- On the one hand, interview can be very flexible, when the interviewer has the freedom to formulate questions as they come to mind around the issue being investigated; and on the other hand, it can be inflexible, when the investigator has to keep strictly to the questions decided beforehand.

- Interviews are classified according to the degree of flexibility in to two as:

***1. Unstructured interview:***

- The strength of unstructured interview is the almost complete freedom they provide in terms of content and structure.
- You are free to order these in whatever sequence you wish. You also have the complete freedom in terms of the wording (content) you use and the way you explain the questions to your respondents.
- You may formulate questions and raise issues on the spur of the moment, depending upon what occurs to you in the context of the discussion.

- There are several types of unstructured interviewing; for example: in-depth interviewing, focus group interviewing, narratives and oral histories.

## **I. In-depth Interview:**

- In-depth Interviewing is ‘repeated face-to-face encounters between the researcher and informants ( those who give the information) directed towards understanding informants’ perspectives on their lives, experiences, or situations as expressed in their own words.’
- This definition underlines two essential characteristics of in-depth interviewing:
  - 1) It involves face-to-face, repeated interaction between the researcher and his/her informant (s); and



2) It seeks to understand the latter's perspectives.

## **II. Focus group interviews:**

- The only difference between a focus group interview and an in-depth interview is that the former is undertaken with a group and the latter with an individual.
- In a focus group interview, you explore the perceptions, experiences, and understandings of a group of people who have some experience in common with regard to a situation or event.
- For instance, you may explore with relevant groups such an issue as domestic violence.

## **III. Narratives:**

- The narrative technique of gathering information has even less structure than the focus group.

- Narratives have almost no predetermined contents except that the researcher seeks to hear the personal experience of a person with an incident or happening in his/her life.
- Essentially, the person tells his/her story about an incident or situation and you, as the researcher, listen passively.
  - And, occasionally, you encourage the individual by using techniques of active listening; that is, you say words such as ‘uh huh’, ‘mmmm’, ‘yeah’, ‘right’ and nod as appropriate.
  - Basically, you let the person talk freely and without interrupting.
- ✓ Narratives are a very powerful method of data collection for situations which are sensitive in nature.

- ✓ For instance, you may want to find out about the impact of child sexual abuse on people who have gone through such an experience.
  - You, as a researcher, ask these people to narrate their experiences and how they have been affected.

#### **IV. Oral histories:**

- ✓ Oral histories, like narratives, involve the use of both passive and active listening.
- ✓ Oral histories, however, are more commonly used for learning about a historical event or episode that took place in the past or for gaining information about a cultural, custom or story that has been passed from generation to generation.

- ✓ Narratives are more about a person's personal experiences whereas, historical, social or cultural events are the subjects of oral histories.
- ❖ In summary, we can conclude that data collection through unstructured interviewing is extremely useful in situations where either in-depth information is needed or little is known about the area.
  - The flexibility allowed to the interviewer in what s/he asks of a respondent is an asset as it can elicit extremely rich information.

## ***2. Structured interview:***

- ✓ In structured interview, the researcher asks a predetermined set of questions, using the same wording and order of questions as specified in the interview schedule.

- ✓ An interview schedule is a written list of questions, open-ended or closed-ended, prepared for use by an interviewer in a person-to-person interaction (this may be face-to-face, by telephone or by other electronic media).
- ✓ Note that an interview schedule is a research tool/instrument for collecting data, whereas interviewing is a method of data collection.
- ✓ One of the main advantages of the structured interview is that it provides uniform information, which assures the comparability of data.
- ✓ Structured interviewing requires fewer interviewing skills than does unstructured interviewing.

## *C. Questionnaire*

- A questionnaire is a written list of questions, the answers to which are recorded by respondents.
- In a questionnaire, respondents read the questions, interpret what is expected and then write down the answers.
- The only difference between an interview schedule and a questionnaire is that in the former it is the interviewer who asks the questions (and if necessary, explains them) and records the respondent's replies on an interview schedule, and in the latter replies are recorded by the respondents themselves.
- This distinction is important in accounting for the respective strengths and weaknesses of the two methods.

- In the case of a questionnaire, as there is no one to explain the meaning of questions to respondents, it is important that questions are clear and easy to understand. Also, the layout of a questionnaire should be such that it is easy to read and pleasant to the eye, and the sequence of questions should be easy to follow.
- A questionnaire should be developed in an interactive style. This means that respondents should feel as if some one is taking to them.
- In a questionnaire, a sensitive question or a question respondents may feel hesitant about answering should be prefaced by an interactive statement explaining the relevance of the question. It is a good idea to use a different font for these statements to distinguish them from the actual questions.

## *Choosing between an interview schedule and a questionnaire*

- The choice between a questionnaire and an interview schedule is important and should be considered thoroughly as the strengths and weaknesses of the two methods can affect the validity of the findings.
- The nature of the investigation and the socioeconomic-demographic characteristics of the study population are central in this choice.
- The selection between an interview schedule and a questionnaire should be based upon the following criteria:



## *1. The nature of the investigation:*

- ✓ If the study is about issues that respondents may feel reluctant to discuss with an investigator, a questionnaire may be the better choice as it ensures anonymity.
- ✓ This may be the case with studies on drug use, sexuality, indulgence in criminal activities and personal finances.
- ✓ However, there are situations where better information about sensitive issues can be obtained by interviewing respondents.
  - It depends on the type of study population and the skills of the interviewer.

## ***2. The geographical distribution of the study population:***

- ✓ If potential respondents are scattered over a wide geographical area, you have no choice but to use a questionnaire, as interviewing in these circumstances would be extremely expensive.

## ***3. The type of study population:***

- ✓ If the study population is illiterate, very young or very old, or handicapped, there may be no option but to *interview respondents*.

# Different ways of administering a questionnaire

- ✓ A questionnaire can be administered in different ways:
  - A. *The mailed questionnaire* –
    - ✓ The most common approach to collecting information is to send the questionnaire to prospective respondents by mail.
      - Obviously this approach presupposes that you have access to their addresses.
    - ✓ Usually it is a good idea to send a prepaid, self-addressed envelope with the questionnaire as this might increase the response rate.
    - ✓ A mailed questionnaire must be accompanied by a covering letter (see below for details).

- ✓ One of the major problems with this method is the low response rate.
- ✓ In the case of an extremely low response rate, the findings have very limited applicability to the population studied.

### ***B. Collective administration-***

- ✓ One of the best ways of administering a questionnaire is to obtain a captive audience such as students in a class room, people attending a function, participants in a program or people assembled in one place.
- ✓ This ensures a very high response rate as you will find few people refuse to participate in your study.
- ✓ Also, as you have personal contact with the study population, you can explain the purpose, relevance and importance of the study and can clarify any questions that respondents may have.

- Here the advice is that if you have a captive audience for your study, don't miss the opportunity-it is the quickest way of collecting data, ensures a very high response rate and you save money on postage.

### ***C. Administration in a public place-***

- ✓ sometimes you can administer a questionnaire in a public place such as a shopping centre, health centre, hospital, school or pub.
- ✓ Of course this depends upon the type of study population you are looking for and where it is likely to be found.
- ✓ Usually the purpose of the study is explained to potential respondents as they approach and their participation in the study is requested.

- Apart from being slightly more time-consuming, this method has all the advantages of administering a questionnaire collectively.

## *The contents of the covering letter*

- It is essential that you write a covering letter with your mailed questionnaire. It should very briefly:
  - ✓ Introduce you and the institution you are representing;
  - ✓ Describe in two or three sentences the main objectives of the study;
  - ✓ Explain the relevance of the study;
  - ✓ Convey any general instructions;
  - ✓ Indicate that participation in the study is voluntary -if recipients do not want to respond to the questionnaire, they have the right not to;
  - ✓ Assure respondents of the anonymity of the information provided by them;
  - ✓ Provide a contact number in case they have any questions;
  - ✓ Give a return address for the questionnaire and a deadline for its return.
  - ✓ Thank them for their participation in the study.

## *Advantages of a questionnaire*

✓ A questionnaire has several advantages.

### *1. It is less expensive:*

✓ As you do not interview respondents, you save time, and human & financial resources.

✓ The use of a questionnaire, therefore, is comparatively convenient and inexpensive.

✓ Particularly, when it is *administered collectively* to a study population, it is an extremely inexpensive method of data collection.

### *2. It offers greater anonymity:*

✓ As there is no face-to-face interaction between respondents and interviewer, *this method provides greater anonymity.*



- In some situations, when sensitive questions are asked, it helps to increase the likelihood of obtaining accurate information.

## *Disadvantages of a questionnaire*

- Although a questionnaire has several disadvantages, it is important to note that not all data collection using this method has these disadvantages.
- The prevalence of a disadvantage depends on a number of factors, but you need to be aware of them to understand their possible bearing on the quality of the data. These are:-

### *A. Application is limited:*

- ✓ One main disadvantage is that its application is limited to a study population that can read and write.
  - It cannot be used on a population that is illiterate, very young, or very old, or handicapped.

***B. Spontaneous responses are not allowed for:***

- ✓ Mailed questionnaires are inappropriate when spontaneous responses are required, as a questionnaire gives them time to reflect before answering.

***C. Response rate is low:***

- ✓ Questionnaires are notorious for their low response rates; that is, people fail to return them.
- ✓ If you plan to use a questionnaire, keep in mind that because not everyone will return their questionnaire, your sample size will in effect be reduced.
- ✓ The response rate depends upon a number of factors:
  - ✓ The interest of the sample in the topic of the study;
  - ✓ The layout and length of the questionnaire;

- ✓ The quality of the letter explaining the purpose and relevance of the study, and
- ✓ The methodology used to deliver the questionnaire.
- You should consider yourself lucky to obtain a 50 percent response rate and sometimes it may be as low as 20 percent.
- However, as mentioned, the response rate is not a problem when a questionnaire is administered in a collective situation.

***D. There is a self-selecting bias:***

- Not everyone who receives a questionnaire returns it, so there is a self-selecting bias.
- Those who return their questionnaire may have attitudes, attributes or motivations that are different from those who do not.

- Hence, if the response rate is very low, the findings may not be representative of the total study population.

***E. Opportunity to clarify issues is lacking:***

- If, for any reason, respondents do not understand some questions, there is no opportunity for them to have the meaning clarified.
- If different respondents interpret questions differently, this will affect the quality of the information provided.

***F. The response to a question may be influenced by the response to other questions:***

- As respondents can read all the question before answering (which usually happens), the way they answer a particular question may be affected by their knowledge of other questions.

***G. It is possible to consult others:***

- ✓ With mailed questionnaires, respondents may consult other people before responding.
- In situations where an investigator wants to find out only the study population's opinions, this method may be inappropriate, though requesting respondents to express their own opinion may help.

***H. A response cannot be supplemented with other information:***

- ✓ An *interview* can sometimes be supplemented with information from other methods of data collection such as *observation*. However, a questionnaire lacks this advantage.

## *Advantages of the Interview*

### *A. The interview is more appropriate for complex situations:*

- It is the most appropriate approach for studying complex and sensitive areas as the interviewer has the opportunity to prepare a respondent before asking sensitive questions and to explain complex ones to respondents in person.

### *B. It is useful for collecting in-depth information:*

- In an interview situation, it is possible for an investigator to obtain in-depth information by probing.
- Hence, in situations where in-depth information is required, interviewing is the preferred method of data collection.

***C. Information can be supplemented:***

- ✓ An interviewer is able to supplement information obtained from responses with those gained from observation of non-verbal reactions.

***D. Questions can be explained:***

- ✓ It is less likely that a question will be misunderstood as the interviewer can either repeat a question or put it in a form that is understood by the respondent.

***E. Interviewing has a wider application:***

- ✓ An interview can be used with almost any type of population: children, handicapped, illiterate or the very old.



## *Disadvantages of the Interview*

### *A. Interviewing is time-consuming and expensive:*

- This is especially so when Potential respondents are scattered over a wide geographical area.
- However, if you have a situation such as an office, a hospital or an agency, where potential respondents come to obtain a service, interviewing them in that setting may be less expensive and less time-consuming.

### *B. The quality of data depends upon the quality of the interaction:*

- In an interview, the quality of interaction between an interviewer and an interviewee is likely to affect the quality of the information obtained.

- Also, because the interaction in each interview is unique, the quality of the responses obtained from different interviews may vary significantly.

***C. The quality of data depends upon the quality of the interviewer:***

- In an interview situation, the quality of the data generated is affected by the experience, skills and commitment of the interviewer.

***D. The quality of data may vary when many interviewers are used:***

- Use of multiple interviewers may magnify the problems identified in the two previous points.

***E. The researcher may introduce his/her bias:***

- Researcher bias in the framing of questions and the interpretation of responses is always possible.

## *F. The interviewer may be biased:*

- If the interviews are conducted by a person or persons, paid or voluntary, other than the researcher, it is also possible that they may exhibit bias in the way they interpret responses, select response categories or choose words to summarize respondents' expressed opinions.

## *Forms of question*

- ✓ The form and wording of questions is extremely important in a research instrument as they have an effect on the type and quality of information obtained.
- ✓ In an interview schedule or a questionnaire, questions may be formulated as:
  - ✓ **Open-ended; or**
  - ✓ **Closed-ended.**
- ✓ In an *open-ended question*, the possible responses are not given.
- ✓ In the case of a questionnaire, the respondent writes down the answers in his/her words, whereas in the case of an interview schedule, the investigator records the answers either verbatim or in a summary describing a respondents' answer.

- In a *closed-ended question*, the possible answers are set out in the questionnaire or schedule and the respondent or the investigator ticks the category that best describes the respondent's answer.
- It is usually wise to provide a category 'other/please explain' to accommodate any response listed.
- When deciding whether to use open-ended or closed-ended questions to obtain information about a variable visualize how you plan to use the information generated.
- This is important because the way you frame your questions determines the unit of measurement by which the responses can be classified.
- In turn the unit of measurement dictates what statistical procedures can be applied to the data and the way the information can be analyzed and displayed.

✓ Let us take, as an example, the question about the variable:  
“income”. *E.g. 1:*

✓ 1(a): What is your average annual income?

✓ Under 10,000

✓ 10,000 – 19,999

✓ 20,000 – 29,999

✓ 30,000 – 39,999

✓ 40,000+

Or

✓ 1(b): How would you categorize your average annual income?

✓ Above average

✓ Average

✓ Below average

- Note that the above example is a closed ended question. If it is to be changed into open-ended question, it will become:

*E.g. 2:*

✓ ‘What is your average annual income? \_\_\_\_\_’

- In the above closed ended questions, income can be qualitatively recorded in categories such as ‘above average/average/below average’, or quantitatively in categories such as ‘under \$10000/\$10000-\$19999/....’.
- Your choice of qualitative and quantitative categories affects the unit of measurement for income which in turn will affect the application of statistical procedures.
- For example, you cannot calculate the average income of a person from the responses to question 1(b) in the above example; nor can you calculate the median or modal category of income.

- But from the responses to question 1(a), you can accurately calculate modal category of income.
- However, the average and the median income cannot be accurately calculated (such calculations are usually made under certain assumptions).
- From the responses to question 1(a) in example 2 where the income for a respondent is recorded in exact dollars, the different descriptors of income can be calculated very accurately.
- In addition, information on income can be displayed in any form. You can calculate average, median or mode.
- The same is true for any other information obtained in response to open-ended and closed-ended questions.



- In closed-ended questions, having developed categories, you cannot change them; hence, you should be very certain about your categories when developing them.
- If you ask an open-ended question, you can develop any categories at the time of analysis.
- Both open-ended and closed-ended questions have their advantages and disadvantages in different situations.
- To some extent, their advantages and disadvantages depend upon whether they are being used in an interview or in a questionnaire and on whether they are being used to seek information about facts or opinions.
- As a rule, closed-ended questions are extremely useful for eliciting factual information and open ended questions for seeking opinions, attitudes and perceptions.

- The choice of open-ended or Closed-ended questions should be made according to the purpose for which a piece of information is to be used, the type of study population from which information is going to be obtained, the method proposed for communicating the findings and the readership.

## *Advantages and disadvantages of open ended questions*

- Open ended questions have a number of advantages and disadvantages:
  - ✓ Open-ended questions provide in-depth information if used in an interview by an experienced interviewer.
  - In a questionnaire, open-ended questions can provide a wealth of information provided respondents feel comfortable about expressing their opinions and are fluent in the language used.
  - On the other hand, analysis of open-ended questions is more difficult. The researcher usually needs to go through another process-*content analysis*-in order to classify the data.

- ✓ In a questionnaire, open-ended questions provide respondents with the opportunity to express themselves freely, resulting in a greater variety of information.
  - Thus respondents are not ‘conditioned’ by having to select answers from a list.
- ✓ The disadvantage of free choice is that, in a questionnaire, some respondents may not be able to express themselves, and so information can be lost.

## *Advantages and disadvantages of closed-ended questions*

- Closed-ended questions, like open-ended questions, have many advantages and disadvantages:
  - ✓ One of the main disadvantages of closed-ended questions is that the information obtained through them lacks **depth and variety**.
  - ✓ There is a greater possibility of investigator bias because the researcher may list only the response patterns that s/he is interested in or those that come to mind.
  - Even if the category of ‘other’ is offered, most people will usually select from the given responses, and so the findings may still reflect the researcher’s bias.

- ✓ The ease of answering a ready-made list of responses may create a tendency among some respondents and interviewers to tick category or categories without thinking through the issue.
- ✓ Closed-ended questions, as they provide ‘**ready made**’ categories within which respondents reply to the questions asked by the researcher, help to ensure that the information needed by the researcher is obtained.
- ✓ Because the possible responses are already categorized, they are easy to analyze.

# Considerations in formulating Questions

- The wording and tone of your questions are important because the information and its quality largely depend upon these factors.
- It is therefore important to be careful about the way you formulate questions.
- The following are some-considerations to keep in mind when formulating questions:
  - A. Always use simple and everyday language:*
  - Your respondents may not be highly educated, and even if they are, they still may not know some of the ‘simple’ technical jargon that you are used to.

- Particularly in a questionnaire, take extra care to use words that your respondents will understand as you will have no opportunity to explain questions to them.
- A pre-test should show you what is and what is not understood by your respondents. For example:
  - ❖ ‘Is anyone in your family **less elastic** about a price change of a particular product?’
  - In this question many respondents, even some who are well educated, will not understand ‘**less elastic**’ and, hence, they either do not answer or answer the question without understanding.

***B. Do not use ambiguous questions:***

- An ambiguous question is one that contains more than one meaning and that can be interpreted differently by different respondents.



- This will result in different answers, making it difficult, if not impossible, to draw any valid conclusions from the information.
- The following question highlight the problem:
  - ✓ ‘Is your work made difficult because you are expecting a baby?’  
Yes      No
- In the survey all women were asked this question.
- Those women who were not pregnant ticked ‘no’, meaning no they were not pregnant, and those who were pregnant and who ticked ‘no’ meant pregnancy had not made their work difficult.
- The question has other ambiguities as well: it does not specify the type of work and the stage of pregnancy.

***C. Do not ask double-barreled (double-direct) questions:***

- A double-barreled question is a question within a question.
- It is committed when someone asks a question that touches upon more than one issue, yet allows only for one answer.
- The main problem with this type of question is that one does not know which particular question a respondent has answered.
- Some respondents may answer both ‘questions’ and others may answer only one of them.

*E.g.: 'How often and how much time do you spend on each visit?'*

- This question has two parts: how often do you visit - and how much time is spent on each visit?

- In this type of question, some respondents may answer the first part, whereas others may answer the second and some may answer both parts.
- Incidentally, this question is also ambiguous in that it does not specify 'how often' in terms of a period of time. is it in a week, a month or a year?

***C. Do not ask leading questions:***

- A leading question is one which, by its contents, structure or wording, leads a respondent to answer in a certain direction.
- Such questions are judgmental and lead respondents to answer either positively or negatively.
- The following are some examples:

E.g.: 1. ‘Unemployment is increasing, isn’t it?’

2. ‘Smoking is bad, isn’t it?’

- The first problem is that these are not questions but statements:
- Because the statements suggest that ‘unemployment is increasing’ and ‘smoking is bad’,
  - Respondents may feel that to disagree with them is to be in the wrong, especially if they feel that the researcher is an authority and that if s/he is saying that ‘unemployment is increasing’ or ‘smoking is bad’, it must be so.
- The feeling that there is a ‘right’ answer can ‘force’ people to respond in a way that is contrary to their true position.

***D. Do not ask questions that are based on presumptions:***

- ✓ In such questions, the researcher assumes that respondents fit into a particular category and seeks information based upon that assumption.

***E.g.:*** 1. How many cigarettes do you smoke in a day?

2. What contraceptives do you use?

- ✓ Both these questions were asked without ascertaining whether or not respondents were smokers or sexually active.
- ✓ In situation like this it is important to first ascertain whether or not a respondent fits into the category about which you are inquiring.

## *Collecting data using secondary sources*

- So far we have discussed the primary sources of data collection where the required data was collected either by you or by someone else for the specific purpose you have in mind.
- There are occasions when your data has already been collected by someone else and you need only to extract the required information for the purpose of your study.
- This section lists some of the many secondary sources that can be grouped into the following categories:
  - A. *Government or semi-government publications:***
    - There are many government and semi-government organizations that collect data on a regular basis in a variety of areas and publish it for use by members of the public and interest groups.

- Some common examples are the census, vital statistics registration, labor force surveys, health reports, economic forecasts and demographic information.

### ***B. Earlier research:***

- For some topics, an enormous number of research studies that have already been done by others can provide you with the required information.

### ***C. Personal records:***

- Some people write historical and personal records that may provide the information you need.

### ***D. Mass media:***

- Reports published in newspapers, magazines and so on may be another good source of data.

# Problems with using data from secondary sources

- When using data from secondary sources, you need to be careful as there may be certain problems with the availability, format and quality of data.
- The extent of these problems varies from source to source.
- While using such data, some issues you should keep in mind are:
  - A. *Validity and reliability:***
    - The validity of information may vary markedly from source to source.
    - For example information obtained from a census is likely to be more Valid and reliable than that obtained from most personal diaries.



## ***B. Personal bias:***

- The use of information from personal diaries, newspapers and magazines may have the problem of personal bias as these writers are likely to exhibit less rigorousness and objectivity than one would expect in research reports.

## ***C. Availability of data:***

- It is common for beginning researchers to assume that the required data will be available, but you cannot and should not make this assumption.
- Therefore, it is important to make sure that the required data are available before you proceed further with your study.

### *D. Format:*

- Before deciding to use data from secondary sources, it is equally important to ascertain that the data are available in the required format.
- For example, you might need to analyze age in the categories 23-33, 34-48 and so on, but in your source, age may be categorized differently, for example 21-24, 25-29 and so on.

## *Statistical units in collection of data*

- A statistical unit is a unit of observation or measurement for which data are collected or derived.
- The statistical unit is therefore the basic element for compiling and tabulating statistical data.

## *Types of statistical units*

- Broadly speaking, statistical units can be of two types, viz:
  - ✓ Units of analysis
  - ✓ Units of collection (Reading Assignment)

### *Unit of analysis:*

- One of the most important ideas in a research project is the *unit of analysis*.
- The unit of analysis is the major entity that you are analyzing in your study.
- It is the 'what' or 'who' that is being studied.
- For instance, any of the following could be a unit of analysis in a study:

- ✓ Individuals (most common)
  - ✓ Groups
  - ✓ Social organization
  - ✓ Geographical units (town, state)
  - ✓ Social interactions (divorces, arrests)
- Why is it called the 'unit of analysis' and not something else (like, the unit of sampling)?
  - We call it 'unit of analysis' because *it is the analysis you do in your study that determines what the unit is.*
  - For instance, if you are comparing the children in two classrooms on achievement test scores, the unit is the individual child because you have a score for each child.
  - That is, If you decide to base an analysis on student scores, the individual is the unit.

- But you might decide to compare average classroom performance.
- In this case, since the data that goes into the analysis is the average itself (and not the individuals' scores) the unit of analysis is actually the group.
- Even though you had data at the student level, you use aggregates in the analysis.

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# **CHAPTER SIX : DATA PROCESSING AND ANALYSIS**

- ✓ If you were actually doing a research study, you would by now have reached a stage where you have either extracted or collected the required information.
- ✓ The next step is what to do with this information. Like:
  - How do you find the answers to your research questions?
  - How do you prove or disprove your hypothesis if you had one?
  - How do you make sense of the information collected?
  - How should the information be analysed to achieve the objectives of your study?



- To answer these questions, you need to go through a series of steps that constitute the core of data processing.
- Irrespective of the method of data collection, the information collected is called *raw data* or simply *data*.
- The first step in processing your data is to ensure that the data are ‘clean’ – that is, free from inconsistencies and incompleteness. This process of ‘cleaning’ is called *editing*.
- Editing consists of scrutinising the completed research instruments to identify and minimize, as far as possible, errors, incompleteness, misclassification and gaps in the information obtained from the respondents.

- Sometimes even the best investigators can:
  - ✓ Forget to ask a question;
  - ✓ Forget to record a response;
  - ✓ Wrongly classify a response;
  - ✓ Write only half a response;
  - ✓ Write illegibly
- There are several ways of minimizing such problems:
  - ***By inference:***
    - ✓ Certain questions in a research instrument may be related to one another and it might be possible to find out the answer to one question from the answer to another.
    - ✓ Of course, you must be careful about making such inferences or you may introduce new errors into the data.

- ***By recall:***
  - ✓ If the data are collected by means of interviews, sometimes it might be possible for the interviewer to recall a respondent's answers.
  - ✓ Again, you must be extremely careful.
- ***By going back to the respondent:***
  - ✓ If the data have been collected by means of interviews or the questionnaires contain some identifying information, it is possible to visit or phone a respondent to confirm or ascertain an answer.
  - ✓ This is, of course, expensive and time-consuming
  - ✓ With regard to points or stages at which editing should be done, one can talk of field editing and central editing

- *Field editing* consists in the review of the reporting forms by the investigator for completing (translating or rewriting) what the latter has written in abbreviated and/or in illegible form at the time of recording the respondents' responses
- This type of editing is necessary in view of the fact that individual writing styles often can be difficult for others to decode/interpret.
- This sort of editing should be done as soon as possible after the interview, preferably on the very day or on the next day.
- While doing field editing, the investigator must restrain himself and must not correct errors of omission by simply guessing what the informant would have said if the question had been asked.

- *Central editing* should take place when all forms or schedules have been completed and returned to the office.
- This type of editing implies that all forms should get a thorough editing by a single editor in a small study and by a team of editors in case of a large inquiry.
- Editor(s) may correct the obvious errors such as an entry in the wrong place, entry recorded in months when it should have been recorded in weeks, and the like.

## *Coding Data*

- Having ‘cleaned’ the data, the next step is to code it.
- Coding refers to the process of assigning numerals or other symbols to answers so that responses can be put into a limited number of categories or classes.
- Coding is necessary for *efficient analysis* and through it the several replies may be reduced to a small number of classes which contain the critical information required for analysis.
- For analysing qualitative data, you need to go through a process called *content Analysis*
  - ✓ Content analysis means analysis of the contents of an interview in order to identify the *main themes* that emerge from the responses given by your respondents

## *Data analysis*

- ✓ By analysis we mean the computation of certain indices or measures along with searching for patterns of relationship that exist among the data groups.
- ✓ Analysis, particularly in case of survey or experimental data, involves estimating the values of unknown parameters of the population and testing of hypotheses for drawing inferences.
- ✓ Coded data can be analysed manually or with the help of a computer
- ✓ Manual analysis, however, is useful only for calculating frequencies and simple cross tabulations

## ***TYPES OF ANALYSIS***

- ✓ Analysis may, therefore, be categorised as:
  - Descriptive analysis: *Descriptive analysis is largely the study of distributions of one variable*  
and
  - Inferential analysis (Inferential analysis is often known as statistical analysis).
- In modern times, with the availability of computer facilities, there has been a rapid development of *multivariate analysis which may be defined as “all statistical methods which simultaneously analyse more than two variables on a sample of observations.”*



## *Testing hypothesis*

- As we have discussed in previous chapters about it, hypothesis is usually considered as the principal instrument in research.
- Ordinarily, when one talks about hypothesis, one simply means a mere assumption or some supposition to be proved or disproved.
- But for a researcher hypothesis is a formal question that he intends to resolve.
- Quite often a research hypothesis is a predictive statement, capable of being tested by scientific methods, that relates an independent variable to some dependent variable.

- For example, consider the following statement:  
*“Students who receive counselling will show a greater increase in creativity than students not receiving counselling”*
- This is a hypothesis capable of being objectively verified and tested.

## *Basic concepts concerning testing of hypotheses*

### *(a) Null hypothesis and alternative hypothesis:*

- *In the context of statistical analysis, we often talk about null hypothesis and alternative hypothesis.*
- *For instance, if we are to compare method A with method B about its superiority and if we proceed on the assumption that both methods are equally good, then this assumption is termed as the null hypothesis.*
- *As against this, we may think that the method A is superior or the method B is inferior, we are then stating what is termed as alternative hypothesis.*
- *The null hypothesis is generally symbolized as  $H_0$  and the alternative hypothesis as  $H_a$ .*

- Suppose we want to test the hypothesis that the population mean ( $\mu$ ) is equal to the hypothesised mean ( $\mu_{H_0}$ ) = 100.
- Then we would say that the null hypothesis is that the population mean is equal to the hypothesised mean 100 and symbolically we can express as:  $H_0 : \mu = \mu_{H_0} = 100$
- If our sample results do not support this null hypothesis, we should conclude that something else is true.
- What we conclude rejecting the null hypothesis is known as alternative hypothesis.
- In other words, the set of alternatives to the null hypothesis is referred to as the alternative hypothesis.
- If we accept  $H_0$ , then we are rejecting  $H_a$  and if we reject  $H_0$ , then we are accepting  $H_a$ .

- For  $H_0 : \mu = \mu_{H_0} = 100$ , we have three possible alternatives, these are:
  1. Population mean is not equal to 100, i.e., it may be more or less than 100:  $H_a : \mu \neq \mu_{H_0}$
  2. The population mean is greater than 100:  $H_a : \mu > \mu_{H_0}$
  3. The population mean is less than 100:  $H_a : \mu < \mu_{H_0}$

***(b) The level of significance:***

- *This is a very important concept in the context of hypothesis testing.*
- It is always some percentage (usually 5%) which should be chosen with great care, thought and reason.
- In case we take the significance level at 5 per cent, then this implies that  $H_0$  will be rejected when the sampling result (i.e., observed evidence) has a less than 0.05 probability of occurring if  $H_0$  is true.

- In other words, the 5 per cent level of significance means that researcher is willing to take as much as a 5 per cent risk of rejecting the null hypothesis when it ( $H_0$ ) *happens to be true*.
- *Thus the* significance level is the maximum value of the probability of rejecting  $H_0$  *when it is true and is usually* determined in advance before testing the hypothesis.

***(c) Decision rule or test of hypothesis:***

- *Given a hypothesis  $H_0$  and an alternative hypothesis  $H_a$ ,* we make a rule which is known as decision rule according to which we accept  $H_0$  (*i.e., reject  $H_a$* ) or reject  $H_0$  (*i.e., accept  $H_a$* ).

- *For instance, if ( $H_0$  is that a certain lot is good (there are very few defective items in it) against  $H_a$ ) that the lot is not good (there are too many defective items in it), then we must decide the number of items to be tested and the criterion for accepting or rejecting the hypothesis.*
- *We might test 10 items in the lot and plan our decision saying that if there are none or only 1 defective item among the 10, we will accept  $H_0$  otherwise we will reject  $H_0$  (or accept  $H_a$ ).*
- *This sort of basis is known as decision rule.*

***(d) Type I and Type II errors:***

- *In the context of testing of hypotheses, there are basically two types of errors we can make (refer it in previous chapters )*

*(e) Two-tailed and One-tailed tests:*

- ✓ *In the context of hypothesis testing, these two terms are quite important and must be clearly understood.*
- ✓ *A one tailed-test would be used when we are to test, say, whether the population mean is either lower than or higher than some hypothesized value.*
- ✓ *In other words, one-tailed test would be used when we are to test, say, whether the population mean is either lower than or higher than some hypothesised value.*
- ✓ *A two-tailed test rejects the null hypothesis if, say, the sample mean is significantly higher or lower than the hypothesised value of the mean of the population.*



- Such a test is appropriate when the null hypothesis is some specified value and the alternative hypothesis is a value not equal to the specified value of the null hypothesis
- Symbolically, the two tailed test is appropriate when we have:  $H_o : \mu = \mu_{H_o}$  and  $H_a : \mu \neq \mu_{H_o}$  which may mean  $\mu > \mu_{H_o}$  or  $\mu < \mu_{H_o}$

## *Procedures for hypothesis testing*

- The various steps involved in hypothesis testing are:

### *(i) Making a formal statement:*

- *The step consists in making a formal statement of the null hypothesis ( $H_0$ ) and also of the alternative hypothesis ( $H_a$ ).*
- *This means that hypotheses should be clearly stated, considering the nature of the research problem.*

### *(ii) Selecting a significance level:*

- *The hypotheses are tested on a pre-determined level of significance and as such the same should be specified.*
- *Generally, in practice, either 5% level or 1% level is adopted for the purpose.*

***(iii) Deciding the distribution to use:***

- ✓ *After deciding the level of significance, the next step in hypothesis testing is to determine the appropriate sampling distribution.*
- ✓ *The choice generally remains between normal distribution (such as the *t-distribution*).*

***(iv) Selecting a random sample and computing an appropriate value:***

- ✓ *Another step is to select a random sample(s) and compute an appropriate value from the sample data concerning the test statistic utilizing the relevant distribution.*
- *In other words, draw a sample to furnish empirical data.*

***(v) Calculation of the probability:***

- ✓ *One has then to calculate the probability that the sample result would diverge as widely as it has from expectations, if the null hypothesis were in fact true.*

***(vi) Comparing the probability:***

- *Yet another step consists in comparing the probability thus calculated with the specified value for  $\alpha$ , the significance level.*
- *If the calculated probability is equal to or smaller than the value in case of one-tailed test (and a  $\alpha/2$  in case of two-tailed test), then reject the null hypothesis (i.e., accept the alternative hypothesis), but if the calculated probability is greater, then accept the null hypothesis.*

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***CHAPTER SEVEN***  
***WRITING THE RESEARCH REPORT***

▪ *The writing process:*

- ✓ The last step in the research process is writing the research report.
- ✓ 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.
- ✓ Each step of the process is important for a valid study, as negligence at any stage will affect all of the study, not just that part.
- ✓ In a way, this last step is the most crucial as it is through the report that the findings of the study and their implications are communicated to your supervisor and readers.

- Most people will not be aware of the amount and quality of work that has gone into your study:
  - While much hard work and care may have been put into every stage of the research, all readers see is the report.
- Therefore, the whole enterprise can be spoiled if the report is not well-written.
- As Burns writes, ‘extremely valuable and interesting practical work may be spoiled at the last minute by a student who is not able to communicate the result easily’ (1994:229).
- 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
- Research writing must therefore be absolutely accurate, clear, free of ambiguity, logical and concise.
  - Bear in mind that you must be able to defend whatever you write should anyone challenge it.



## *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 organisation 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) rewriting and polishing:***

- *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 mouldering cement and loose brick.”
- 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 researcher 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.

*(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, rather it must maintain interest and 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* *(components of a research 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.

### *(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) The 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 summarised form.

### *(iii) The 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 judgement 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 drawn from 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 summarises 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) The 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.

# Types of research reports

- Generally speaking, we do have two types of research reports:
  - ✓ Technical report
  - ✓ Popular report

## *Technical report:*

- *A technical report is used whenever a full written report of the study is required whether for recordkeeping or for public dissemination.*
- In the technical report, the main emphasis is on
  - ✓ The methods employed;
  - ✓ The assumptions made in the course of the study;
  - ✓ The detailed presentation of the findings including their limitations and supporting data.

## *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 and diagrams.
- In such a report, emphasis is given on practical aspects and policy implications.

# Presenting the research report

- Oral presentation is effective when supplemented by various visual devices.
- Use of slides, wall charts and blackboards is 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.