RESEARCH METHODOLOGY

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Chapter I

Introduction to Research

Chapter Objectives

- Define the concept of research
- Explain the Qualities of Good Research Process
- Explain the Goals of research
- Discuss the Motivations in doing research
- Discuss the processes of research

1.1 What is Research

- It is an investigation of finding solutions to scientific and social problems through objective and systematic analysis.
- Research is an **organized** and **systematic** way of **finding answers** to **questions**.

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- Research is a systematic, controlled empirical and critical method consisting of enumerating the problem, formulating a hypothesis, collecting the facts or data, analyzing the facts and reaching certain conclusions either in the form of solutions toward the concerned problem or in certain generalizations for some theoretical formulation.

What Research Is Not

- **Research isn't information gathering:**
- Gathering information from resources such as books or magazines isn't research.
- No contribution to new knowledge.
- **Research isn't the transportation of facts:**
- 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.

1.2 Characteristics of (Good) Research

- To qualify as a research, a process must have certain characteristics as listed below:
  - **A. Organized** in that there is a structure or method in going about doing research. It is a planned procedure, not a spontaneous one. It is focused and limited to a specific scope.
  - **B. Systematic** because there is a definite set of procedures and steps which you will follow. There are certain things in the research process which are always done in order to get the most accurate results.

C. Rigorous

- The research procedures followed to find answers to questions are relevant, appropriate and justified.

D. Critical

- The methods employed and procedures used should be critically scrutinized.
- 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.

E. 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.
- The research procedure used should be described in sufficient detail to permit another researcher to repeat the research for further advancement, keeping the continuity of what has already been attained.

F. Controlled

- In exploring the causality relation to two variables, the study must be set in way that minimizes the effects of other factors affecting relationship.
- In social science research, however, since controlling is almost impossible, the effect of the other variable must be quantified rather.

F. Empirical

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

1.3. Goals of Scientific Research

- The purpose of scientific research is problem solving – practical or theoretical nature.
- Seeking solutions to practical or theoretical problems involves:
- Describing phenomena/pictorial account of the phenomena
- Explaining phenomena/cause -and -effect relationships/
- Predicting phenomena/predicting what will happen in the future/.
- Controlling phenomena/intervention packages
- Comparing phenomena/comparing two or more groups on a certain behavior or even within the same group.

1.4.Motivations in Doing Research

- What makes people to undertake research?
- The possible motives for doing research may be either one or more of the following among others:

a. Desire to get a research degree along with its consequential benefits like better employment, promotion, increment in salary, etc.

Cont'd

b. Desire to face the challenges in solving the unresolved problems, i.e., concern over practical problems;

c. Desire to get intellectual joy of doing some creative work;

d. Desire to be of service to society; and

e. Desire to get respectability.

1.5. The Difference between Research Method and Research Methodology

- A method is a particular research technique or way to gather evidence about a phenomenon.
- Methods are the specific tools to gather data such as surveys, interviews, participant observations.
- Methodology describes “the theory of how inquiry should proceed”
- Methodology encompasses our entire approach to research – how we design and implement research studies.

1.6 Classification of Research

Basis of Classification

- Goal of research
  1. Basic research
  2. Applied research
- Specific Objectives of Research
  1. Descriptive
  2. Explanatory
  3. exploratory
- Approaches of research
  1. Qualitative research
  2. Quantitative research
  3. Mixed research
- Designs
  1. Experimental
  2. Quasi-experimental
  3. Non-experimental

- The type of data used in research
  1. Primary or field research
  2. Secondary or desk research
- Fields of study.
  1. natural science research,
  2. social science research,
  3. educational research,
  4. behavioral science research,
  5. health science research, *etc*

Pure or Basic Research

- Basic research (also called **fundamental** or **pure research**) has as its primary objective of the advancement of knowledge and the theoretical understanding of the relations among variables.
- It is basically concerned with the formulation of a theory or a contribution to the existing body of knowledge.
- Basic research is designed to add to an organized body of scientific knowledge and does not necessarily produce results of immediate practical value.

Ctd

Basic research:

- Represents a rigorous and structured type of analysis;
- Employs careful sampling procedures in order to extend the findings beyond the group or situation;
- Basic research lays down the foundation for the applied research that follows; and
- Has little concern for the application of the findings or social usefulness of the findings.
- The major **aims** of basic research include:
  - Obtaining and using empirical data to formulate, expand, or evaluate theory; and
  - Discovery of knowledge solely for the sake of knowledge.

Forms of Basic Research

- **Discovery**: where a totally new idea or explanation emerges from empirical research which may revolutionize thinking on that particular topic.
- **Invention** : where a new technique or method is created.
- **Reflection** : where an existing theory, technique or group of ideas is re-examined possibly in a different context.

Applied Research

- Applied research is designed to solve **practical problems** of the modern world, rather than to acquire knowledge for knowledge's sake.
- The goal of the applied scientist is to **improve the human condition.**
- It is undertaken to solve immediate practical problem and the goal of adding to the scientific knowledge is secondary.
- The primary purpose for applied research is discovering, interpreting, and the development of methods and systems for solving practical problems.

Ctd

- Applied research is conducted in relation to actual problems and under the conditions in which they are found in practice;
- It employs methodology that is not as rigorous as that of basic research;
- It yields findings that can be evaluated in terms of local applicability and not in terms of universal validity.

Descriptive, Explanatory, & Exploratory Research

Descriptive research

- It sets out to describe and to interpret **what is**.
- It looks at individuals, groups, institutions, methods and materials in order to describe, compare, contrast, classify, analyze and interpret the entities and the events that constitute the various fields of inquiry.
- It aims to describe the state of affairs as it exists.
- the goal of descriptive research is to describe some aspect of a phenomenon, i.e., the status of a given phenomenon.

Explanatory Research

- **Explanatory research**, aims at establishing the cause and effect relationship between variables.
- The researcher goes beyond merely describing the characteristics, to analyze and explain why or how something is happening.
- explanatory or analytical research aims to understand phenomena by discovering and measuring causal relations among them.

Ctd

- Explanatory research builds on both exploratory and descriptive researches.
- It involves:
  - Explaining things not just reporting.
  - Determining which of several explanations is best.
  - Determining the accuracy of the theory; test a theory's predictions or principle.
  - Providing evidence to support or refute an explanation or prediction.
  - Testing a theory's predictions or principles.

Exploratory Research

- Exploratory research is conducted when there are few or no earlier studies to which references can be made for information.
- It provides insights into and comprehension of an issue or situation for more rigorous investigation later.
- Exploratory research is a type of research conducted because a problem has not been clearly defined.
- Its purpose is to gain background information and better understand and clarify a problem.
- Exploratory research helps to:
  - determine the best research design,
  - develop hypotheses,
  - develop questions to be answered,
  - understand how to measure a variable,
  - determine data collection method, and
  - determine selection of subjects.

Ctd

- Exploratory research often relies on:
  - secondary research
  - qualitative approaches (informal discussions)
  - and more formal approaches through in-depth interviews, focus groups, projective methods, case studies or pilot studies.
- The results of exploratory research are not usually useful for decision-making by themselves, but they can provide significant insight into a given situation.

1.7. The Research Process

- Whichever type of research you choose, it will be useful to understand something of the process of research.
- This can help you to form a framework for your activities.
- Research process consists of series of actions or steps necessary to effectively carry out research and the desired sequencing of these steps.
- These activities indeed overlap continuously rather than following a strictly prescribed sequence.
- A brief description of these activities is as follows:

1. Formulating the Research Problem

- Formulating a research problem is the first and most important step in the research process.
- Formulation of the problem means defining the problem precisely.
- Formulation of problem is essential because when the problem is formulated, an appropriate technique can easily be applied to generate alternative solutions.
- In other words, a problem defined is half solved.

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- Formulation of a problem involves the following steps:

1. Statement of the problem in a general way
2. Understanding the nature of the problem
3. Surveying the available literature
4. Developing the idea through discussion
5. Rephrasing the research problem into a working proposition.

2. Extensive Literature Review

- Once the problem is formulated, a brief summery of it should be written down.
- Literature review has three functions:
  - Bringing clarity and focus to the research problem
  - Improving the methodology
  - Broadening the researcher knowledge in the research area.

3. Development of Working Hypothesis

- After extensive literature survey, researcher should state in clear terms the working hypothesis.
- Working hypotheses is tentative assumption made in order to draw out and test its logical or empirical consequences.
- Hypotheses should be very specific and limited to the piece of research in hand because it has to be tested.

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- The role of hypotheses is to guide the researcher by delineating the area of research and keep him on the right track.
- It sharpens his thinking and focuses attention on the more important facets of the problem.
- It also indicates the type of data and the type of methods of data analysis to be used.

4. Preparing the ResearchDesign

- Research design is defined as a blueprint or detailed plan for how a research study is to be completed, operationalizing variables so they can be measured, selecting a sample of interest to study, collecting data to be used as a basis for testing hypothesis and analyzing the results.
- It is the complete scheme or programme of the research.

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- A research design should include the following:

a) The study design per se
b) The logistical arrangements that you purpose to undertake
c) The measurement procedures
d) The sampling strategy
e) The frame of analysis
f) Time frame

5. Determining Sampling Design

- All the items under consideration in any field of inquiry constitute a **universe or population**.
- A complete enumeration of all the items in the population is known as a **census** inquiry.
- Because of the **difficulty**, **relative inaccuracy** and **biasness** related to census study determining sample, few elements from the population, becomes mandatory.

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

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- Samples can be either probability samples or non-probability samples.
- With probability samples each element has unknown probability of being included in the sample but in the non-probability samples do not allow the researcher to determine this probability.

6. Collecting the Data

- There are several ways of collecting the appropriate data which differ considerably in context of money (costs), time and other resources at the disposal of the researcher.
- Primary data can be collected either through experiments or through survey.

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- In the case of a survey, data can be collected by any one of the following specific ways:
  1. **Observation**
  2. **Interview**
  3. **Questionnaire**
  4. **Schedule**

7. Analysis of Data

- The analysis of data requires a number of closely related operations such as:

a) Establishment of categories,

b) Coding,

c) Tabulation ,and

d) Drawing statistical values.

8. Hypothesis Testing

- After analyzing the data, the researcher is in a position to test the hypothesis, if any, he/she had formulated earlier.
- Do the facts support the hypotheses or they happen to be contrary?
- Various tests, such as Chi square test, t-test, F-test may be applied.

9. Preparation of the Research Report

- Finally, the researcher has to prepare the report of what has been done by him following the appropriate formats and appropriate language.

Chapter II

Writing Research Proposal

2.1. Meaning of Research Proposal

- Research Proposal is an overall plan, scheme, structure and strategy designed to obtain answers to the research problems or questions.
- It outlines the various tasks you plan to undertake.

2.2. Importance of Research Proposal

a) It serves as a basis for determining the feasibility of the research project.
b) It provides a systematic plan of procedures for the researcher to follow.
c) It gives the research supervisor a basis for guiding the researcher while conducting the study.
d) It reduces the possibility of costly mistakes.

2.3. Identifying Research Topic

- The identification of a research topic or problem is an important phase of the entire research process.
- Therefore, a considerable care must be taken while selecting it.
- It requires a great deal of time, energy, and logical thinking.

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- There are some important sources which are helpful to a researcher for selecting a research topic.
- These include the following:

1. **Professional Experience**

- The day-to-day observation of the incidences in the working places and out of the working places.

Cont'd

2. **Contact and Discussion** with People

- Contacts and discussions with research oriented people in conferences, seminars or public lectures serve as important sources of problem.

3. Inference from Theory

- A research problem can be derived from a critical look into various theories .

Cont'd

4. **Professional Literature**

- Consultation of research reports, bibliographies of books and articles, periodicals, research abstracts…

5. **Technological and Social Change**

- Changes in technology or social environment such as changes in attitudes, preferences, policies of a nation…

2.4 Factors to Consider While Selecting Topics

- When selecting a research problem/topic, the following considerations should be kept in mind.

A. **Interest**

- select a topic that really interests you: this is one of the most important considerations.
- A research endeavor is usually time-consuming, and involves hard work and possibly unforeseen problems.
- If you select a topic which does not greatly interest you, it could become extremely difficult to sustain the required motivation, and hence the completion time could be affected.

B. Magnitude-(scope)

- Narrow the topic down to something manageable, specific and clear.
- It is extremely important to select a topic that you can manage within the time and resources at your disposal.

C. 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 program, you must be clear as to what determines effectiveness and how it will be measured.
- Do not use concepts in your research problem that you are not sure how to measure.
- This does not mean you cannot develop a measurement procedure as the study progresses.
- While most of the developmental work will be done during your study, it is imperative that you are reasonably clear about the measurement of these concepts at this stage.

D. Level of Expertise

- Make sure you have an adequate level of expertise for the task you are proposing.

E. 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 is useful in policy formulation.

F. Availability of data

- Before finalizing your topic, make sure that the necessary data are available in the format you want(in the case secondary data) or can be collected from the primary sources.

G. Ethical issues

- In the course of conducting a research study, the study population may be adversely affected.
- How ethical issues can affect the study population and how ethical problems can be handled should be thoroughly examined while selecting research topic.

Hence,…

- Before proceeding with a proposal or a study, one needs to weigh these factors and

Issues to remember:

- Know your area of expertise: what are your strengths and what are your weaknesses?
- Play to your strengths, not to your weaknesses.
- Do not assume that, because you do not understand an area, no one understands it or that there has been no previous research conducted in the area.
- If you want to get into a new area of research, learn something about the area before you write a proposal (e.g., refer to previous research works).

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- Ask others for their reaction to your topic. Seek reactions from colleagues, noted authorizes in the field, and academic advisers and faculty committee members.
- Before you start work on your research proposal, find out whether you're required to produce the proposal in a specific format.
- Most graduate programs at different Universities have a general outline and a guide as to how many pages to produce.

2.5 Preliminary steps in Designing a research proposal: Selecting Your Approach

- Preliminary steps in designing a research proposal are to assess the knowledge claims brought to the study, to consider the strategy of inquiry that will be used, and to identify specific methods.
- These steps are called elements of inquiry.
- These elements of inquiry, i.e., knowledge claims, strategies, and methods combine to form different approaches to research.
- These approaches, in turn, are translated into processes in the design of research proposal.
- Using these three elements, a researcher can then identify either the quantitative, qualitative, or mixed methods approach to inquiry.

2.6 Basic Components of a Research Proposal

- It is helpful to decide the topics that will go into a proposal whichever approach to research is adopted.
- All the topics need to be interrelated so that they provide cohesive picture of the entire proposed project.
- An outline of topics will be helpful, but the topics will slightly differ depending on whether the proposal is for a qualitative, quantitative, or mixed methods study.

- Overall, however, there are central arguments that frame any proposal as presented below.
- They are questions to be addressed in a scholarly proposal.
- These questions, if adequately addressed in one section for each question, constitute the foundation of good research, and they could provide the overall structure for a proposal.

1. What do we need to better understand your topic?
2. What do we know little about in term of your topic?
3. What do you propose to study?
4. What are the setting and the people that you will study?
5. What methods do you plan to pursue to provide data?
6. How will you analyze the data?
7. How will you validate your findings?
8. What ethical issues will your study present?
9. What do preliminary results show about the practicability and value of the proposed study?

A. Format for a Quantitative proposal

- For a quantitative study, the format conforms to standards easily identified in journal articles and research studies.
- The form generally follow the model of an introduction, a literature review, methods, results, and discussion.
- In designing proposals in a quantitative a social science studies, the following format may be considered although the order of the sections, especially in the introduction, may vary from study to study.

Illustration: Quantitative Research Proposal Format

1. Title page
2. Abstract
3. Introduction/Background
4. Statement of the problem
5. Objective of the study
6. Literature review
7. Hypotheses/Questions
8. Conceptual framework
9. Scope of the Study
10. Significance of the study
11. Problems and limitations
12. Research methods, materials and procedures
    - o Study area
    - o Study design
    - o Study subjects
    - o Eligibility Criteria (if any)
    - o Sample size
    - o Sampling Methods
    - o Method of data collection
    - o Description of variables
    - o Data quality assurance
    - o Operational definitions
    - o Plan of data analysis
13. Work plan
14. Budget
15. References
16. Appendices/Annexes

B. Format for a Qualitative Proposal

- No commonly accepted format exists for a qualitative proposal, although some recommendations may exist.
- However, the following alternative model can be proposed.

Illustration: A qualitative Research Proposal Format

- Title page
- Abstract
- Introduction
  - Statement of the problem (including existing literature about the problem)
  - Objective of the study
  - The research questions
  - Delimitations, and limitations
- Procedures
  a. Characteristics of qualitative research(optional)
  b. The research strategy
  c. The role of the researcher
  d. Steps in data collection and analysis
  e. Strategies for validity the accuracy of findings, and
  f. Narrative structure.
- Anticipated ethical issues
- Significance of the study
- Appendices: interview questions, observational forms, timeline, and proposed budget

- The format includes only two major sections, the introduction and the procedures.
- A review of the literature may be included, but it is optional, and, the literature may be included to a greater extent at the end of the study or in the expected out comes section.

C. Format for a Mixed Method Proposal

- In a mixed methods design format, the research brings together approaches that he/she included in both the quantitative and qualitative formats.
- An example of such a format appears in the following slide.

Illustration: A Mixed Method format

- Title page
- Abstract
- Introduction
  - Statement of the problem
  - Objective of the study (include both quantitative and quantitative statements and a relational for mixing methods)
  - Research questions(include both qualitative and quantitative)
- Review of the literature (separate section, if quantitative)
- Procedures or methods
  - Characteristics of mixed methods research
  - Type of mixed methods design (including decision involved in its choice)
  - Visual model and procedures of the design
  - Data collection procedures
    - Types of data
    - Sampling strategy
  - Data analysis and validity procedures
  - Report presentation structure
- Role of the researcher
- Potential ethical issue
- Significance of the study
- Appendixes: instruments or protocols, outline for chapters, and proposed budget.

- This format shows that the researcher poses both a purpose statement and research questions for quantitative and qualitative components.
- Further, it is important to specify a rational for the mixed method approach in the study.
- The researcher also identifies key elements of this design, such as the type of mixed methods study, a visual picture of the procedures, and both he quantitative and qualitative data collection procedures and analysis.

Components of Research proposal/ research report

a. Prefatory parts

1. Title Page

- On separate lines and centered, the title page has the title of the study, the author's name, the institutional affiliation, and date.
- Particularly, put your name, the name of your department/faculty/college, the name of your advisor(s) and date of delivery under the title.

- The title should not be too lengthy or too short.
- It should provide sufficient information about the nature of the study.
- The title should not be burdened by pompous words. The language in the title should be professional in nature but pedantic.
- A title ought to be well studied, and to give, so far as its limits permit, a definite and concise indication of what is to come.

Cont'd

- All words in the title should be chosen with great care, and association with one another must be carefully managed.
- A good title is defined as the fewest possible words that adequately describe the contents of the study.
- Title is a label: it is not a sentence.
- Titles should almost never contain abbreviations.
- The title page has no page number and it is not counted in any page numbering.

- Be brief and avoid wasting words, eliminate unnecessary words such as "An Approach to" or "A study of."
- Use a single title or a double title. An example of a double title is “An Ethnography: Understanding a Child‘s Perception of War."
- A title should be no longer than 12 words, eliminate most articles and prepositions, and make sure that it includes the focus or topic of the study.

- Another strategy for topic development is to pose the topic as a brief question. What question needs to be answered in the proposed study?
- A researcher might ask "What brings People to Tourist Sites in Ethiopia?”
- This question will be expanded later on the objectives of the study and on research question and hypotheses to be more descriptive of you study.

Exercise

- *What do you think of the following research topics?*

1. *How does the human brain work when faced with stress?*
2. *The workings of the human brain in times of stress.*
3. *Stress and the human brain.*
4. *Effect of stress on short-term memory*
5. *Abebe's memory function during semester final exams*

Components…cont'd

2. Abstract

- At the top of the page, centered, you should have the word "Abstract."
- It is a concise summary of the entire paper, including the problem, major hypotheses, sample and population, a brief description of the measures, and the name of the design or a short description
- Fits to one page, sometimes not more than 300 words.
- Not more than one side of double spaced A4 paper.
- **It should be placed before table of content.**

Cont'd

- Do not put information in the abstract that is not in the main text of your research proposal.
- Do not put references, figures, or tables in the abstract.

ISSUES TO REMEMBER:

- ***The abstract is a concise summary of the*** *material presented in the proposal.*
- *Though it appears at the front of the proposal, it is written last.*
- *It enables the reader to:*

1. *Identify the basic content of a document quickly and accurately,*
2. *Determine its relevance to their interests, and*
3. *Decide whether they need to read the document in its entirely*

1. Introduction

- 1.1 **Background of the Problem/study**
- Generally introduce the problem to the readers.
- The introduction is the part of the proposal that provides readers with the background information for the research proposal.

Cont'd…

- The introduction should address the following points:

1. Sufficient background information to allow the reader to understand the context and significance of the question you are trying to address.
2. Proper acknowledgement of the previous work on which you are building.
3. The introduction should be focused on the research question(s).

Issues to remember:

- In summary, the introduction/background section should contain a rationale for your research.
- Why are you undertaking the project?
- Why is the research needed?
- This rationale should be placed within the context of existing research or within your own experience and/or observation.
- You need to demonstrate that you know what you're talking about and that you have knowledge of the literature surrounding this topic.

- *If you're unable to find any other research that deals specifically with your proposed project, you need to say so, illustrating how your proposed research will fill this gap.*
- *If there is other work that has covered this area, you need to show how your work will build on and add to the existing knowledge.*
- *Basically, you have to convince people that you know what you're talking about and that the research is important.*

1.2 Statement of the Problem

- Having provided a broad introduction to the area under study, now focus on issues relating to the central theme, identify some of the gaps in the existing body of knowledge.
- Identify some of the main unanswered questions.
- Elaborate about the problem.
- Effective problem statements answer the question "***Why does this research need to be conducted***."
- Statement of the problem encapsulates the question you are trying to answer.

- Use the deficiencies model as a general template for writing a statement of the problem to a proposal or research study.
- It is a popular approach used in the social sciences.
- It consists of five parts:

The research problem

Studies that have addressed the problem,

Deficiencies in the studies,

The importance of the study for an audience, and

The purpose statement.

1.3. Objective of the study

- The objective of the study statement in a scholarly study advances the central idea in a study, and as such it is the most important statement in a research proposal or study.
- The objective sets the intent, and the major idea of a proposal or a study.
- The objective of a research delineates the ends or aim which the inquirer seeks to bring about as a result of completing the research undertaken.
- The objective of a research project summarizes what is to be achieved by the study.
- Objective of the study builds on a need (the problem and is refined into specific question (the research questions).

- Often sated as general and specific intents.
- After statement of the general objective, specific objectives may be mentioned.
- **The general and specific** objectives are logically connected to each other and the specific objectives are commonly considered as smaller portions of the general objectives.
- Researchers often use the present or past verb tense in thesis and journal articles, and the future tense in proposals because researchers are presenting a plan for a study.

1.3.1. General Objective of the Study

- The main/general objective indicates the central thrust of your study.
- Is very similar to the title of your research.
- What exactly will be studied?
- General statements specifying the desired outcomes of the proposed project.

- **While Writing General Objective of the Study**:
- Use a single sentence or a paragraph that readers can identify easily.
- Use wording such as "*The General Objective of this study….*"
- The inquirer mentions the approach and design of inquiry, the participants, and the research site for the study.
- Use action words such as "discover," "develop," or "understand."

- Although qualitative, quantitative, and mixed methods purpose statements share similar topics, each may have some peculiarities.
- For example, quantitative objective statements differ considerably from the qualitative models in terms of the language and a focus on relating or comparing variables or constructs.
- To understand the differences, the following illustrations for constructing a thorough but manageable objective statement for a proposal or study are helpful.

Illustrations:

a. Qualitative Objective Statement Example:

- **Format**: The general objective of this _____(strategy of inquiry, such as ethnography, case study, or other type) study is (was ? will be?) to _____ (understand? Describe? Develop? Discover?) the _____(central phenomenon being studied) for _____ (the participants, such as the individual, groups, organization) at _____(research site).
- Example: The main purpose of this case study will be to explore factors that may have contributed to the development of reading disabilities in adolescents in Gondar City.

Illustrations (cont'd):

a. Quantitative Objective Statement Example:

- Format: The general objective of this _____ (experiment? Survey?) study is (was? Will be?) to test the theory of _____ that _____ (compares? Relates?) the _____ (independent variable) to _____ (dependent variable), controlling for _____ (control variable) for _____ (participants) at _____ (the research site).
- Example: The general objective of this survey study will be to examine the relationship between personal characteristics and the job motivation of employees of the Ministry of Tourism and Culture Affairs in Ethiopia.

Illustrations (cont'd):

a. Mixed method Objective Statement Example:

- **Format**: The main objective of this concurrent mixed methods study is to better understand a_____(research problem) with _____ (participants) at _____ (the research site).
- **Example**: The main objective of this concurrent mixed method study is to shed light on parental saving behaviors using student and parent views in the case of University of Gondar.

1.3.2. Specific Objectives

- The specific objectives identify the specific issues you propose to examine.
- Specific statements summarizing the proposed activities and including description of the outcomes and their assessment.
- It identifies in greater detail the specific aims of the research project, often breaking down what is to be accomplished into smaller logical components

- Specific objectives should systematically address the various aspects of the problem as defined under 'Statement of the Problem' and the key factors that are assumed to influence or cause the problem.
- Each specific objective should delineate only one issue.
- In formulating specific objectives, use action oriented verbs such as:
  - to determine
  - to find out
  - to ascertain
- Specific objectives should be numerically listed.

- In a quantitative studies,

a. the researcher mentions the variables and their relationship or comparison.

- The design of a quantitative specific objective statements, therefore, begins with identifying the proposed variables for a study (independent, intervening, dependent, control).
- The intent of using the variables quantitatively is often either to relate variable as one typically finds in a survey) or to compare samples or groups in terms of an out come (as commonly found in experiments).
- Hence, the statement employs words such as (e.g., "relate," "compare," "describe") to present the relationships between variables.

b. A position or ordering of the variable from left to right in the specific objective statements, beginning with the independent variable, followed by the dependent variable.

- Place intervening variables between the independent and dependent variable.
- Researchers also place the control variables between the independent and dependent variables.
- Alternatively: control variables might be placed immediately following the dependent variable, in a phrase such as “controlling for . . . .”

- In a qualitative studies, specific objective statements shall:

a. Focus on a single phenomenon (or concept or idea) to be explored or understood.

- This means that it does not convey "relating" two or more variables or "comparing" two or more groups, as is typically found in quantitative research.
- Instead, advance a single phenomenon to study, recognizing that the study may evolve into an exploration of relationships or comparisons among ideas.

b. employ nondirectional language rather than predetermined outcomes/ called the "law of no direction".

- Use neutral words and phrases, such as exploring the "experiences of individuals" rather than the "successful experiences of individual."
- Other words and phrases that may be problematic include "useful," "positive," and "informing" – all words that suggest an outcome that may or may not occur.

- In a mixed methods study, the elements of both good qualitative and quantitative specific objective statements would be included in the statement.

a. Include the characteristics of a good qualitative statement, such as focusing on a single phenomenon, using action words and nondirectional language.

b. Include the characteristics of a good quantitative statement, such as identifying the variables, relating variables or comparing groups in terms of variables, and placing these variables in order from independent to dependent

c. Consider adding information about the specific types of both qualitative and quantitative data collection.

Issues to remember:

- *Keep in mind that when a proposal is evaluated, the anticipated results will be compared to the objectives.*
- *If the objectives have not been spelled out clearly, the proposal cannot be evaluated.*

1.4. Hypotheses and/or Questions

- Investigators place signposts in their research to carry the reader through a plan for a study.
- The first signpost is the objective statement, which establishes the central direction for the study.
- From the broad, general purpose statement, the researcher narrows the focus to specific questions to be answered or predictions (i.e., hypotheses) to be tested.
- This section addresses the second signpost- the research questions, or hypotheses – in a proposal.

- Hypotheses and questions are linked to the speculative proposition of the problem statement.
- Hypotheses are tentative statements/solutions or explanations of the formulated problem
- If you are going to test hypotheses, list them in this section.
- In a study you may have as many hypotheses as you want to test.
- However, in social science investigations it is not mandatory to have a hypothesis.

- You can conduct a perfectly satisfactory study without formulating a hypothesis, but research questions.
- The term question implies an interrogative statement that can be answered by data.
- Research questions and hypotheses narrow the objective statement and become major signposts for readers of research.
- Guidelines for writing this section may slightly vary depending on the method adopted.

- Qualitative researchers ask at least one central question and several subquestions.
- They begin the questions with words such as “how” or “what” and use exploratory verbs, such as “explore” or “describe”.
- They pose broad, general questions to allow the participants to explain their ideas.
- They also focus initially on one central phenomenon of interest.
- The questions may mention the participants and the site for the research.

- Quantitative researchers write either research questions or hypotheses.
- These questions or hypotheses include variables that are described, related, categorized into groups for comparison, and measured separately for the independent and dependent variables.
- In many quantitative proposals, writers use research questions; however, a more formal statement of research employs hypotheses.

- These hypotheses are predictions about the outcomes of the results, and they may be written as alternative hypotheses specifying the exact results to be expected (more or less, higher or lower of something).
- They also may be stated in the null form, indicating no difference or no relationship between groups on a dependent variable.
- Typically in questions and hypotheses, the researcher writes the independent variable9s) first, followed by the dependent variable(s).
- One model for ordering all the questions in a quantitative proposal is to begin with descriptive questions, followed by the inferential questions that relate variables or compare groups.

- Mixed methods research questions should address both the qualitative and the quantitative components in a study.
- In a proposal, it is difficult to be specific about the second-phase questions.
- Typically, if both qualitative and quantitative questions are introduced in a study, their order of sequence in the study suggests their priority in the study.
- Also, the weight given to the qualitative and quantitative phases will dictate the order of the questions.
- Finally, it has been suggested alternatively to write the research questions as an introduction to each phase in the study rather than presenting them all at the beginning of the study.

1.5. The scope of the study

- Refers to depth and the level of detail of the study.
- The scope may focus on specific variables or a central phenomenon, delimited to specific participants or sites, or narrowed to one type of research design (e.g., ethnography or experimental research).

1.6. **Significance of the Study**

- This section describes the significance of the study for select audiences.
- It justifies the need, importance and urgency of the study; and as to how the results of his/her study will be useful to the beneficiaries.
- By including this section, the writer creates a rationale for conducting the study and a statement why the results will be important.

- It expands on statement of the problem, in which the writer briefly mentions the importance of the problem for audiences.
- In contrast, a significance section elaborates on the importance and implications of a study for researchers, practitioners, and policy makers.

- In designing this section, one might include
- Three or four ways in which the study adds to the scholarly research and literature in the field
- Three or four ways in which the study helps improve practice
- Three or four reasons why the study will improve policy.
- Then discuss how does your investigation benefits them separately, preferably in one paragraph each.

1.7. Definition of terms and concepts

- The technical terms or words and phrases having special meaning need to be defined operationally.
- Researches need to define terms to give precise and clear meaning to words used in the proposal.
- These definitions need to appear when the words are first introduced; should be created using accepted definitions in the literature; should be presented in a detailed, operational way; and should be clearly specified, such as by setting them off in a separate section in the proposal.

- In qualitative research, the inquirer provides tentative definitions in order to permit definitions to emerge from participants in the study.
- Also, these terms are few.
- In quantitative research, investigators define many terms in their studies so that the researcher and the readers share a common and consistent definition.
- In mixed methods research, terms may be specified in an approach consistent with either qualitative or quantitative research; however, mixed methods inquiry presents its own terms about designs, and these need to be identified for readers not familiar with this form of research.

1.8. Problems and Limitations

- Provide problems and limitations to identify potential weaknesses of the study.
- At the proposal stage, it is often difficult to identify weaknesses in the study before it has begun.
- However, advisers like students to anticipate the potential weaknesses in their studies, and student can identify limitations related to the research methods of data collection and analysis.
- Problems refer to difficulties relating to logistical details, whereas limitations designate structural problems relating to methodological aspects of the study.

- For example, problems may be related to
  - the availability of data.
  - securing permission from the agency/ organization to carry out the study.
  - obtaining the sample.
- In your opinion the study design you chose may not be the best but you might have had to adopt it for a number of reasons.
- This is classified as limitation of the study.
- Such limitations should be communicated to readers.

1.9 The Structure of the Report

- As clearly as possible, state how you intend to organize the final report.
- Plan to develop your chapters round t he main themes or your study.
- The title of each chapter should around the main themes of your study.
- The title of each chapter should clearly communicate the main thrust of its contents.

NB:

- In many dissertation and thesis proposals, students include definitions of terms, the delimitations, the limitations, the significance and structure of the study elements in a distinct section of the proposal.
- In journal articles, however, definitions and significance of the study discussion are often contained in introductions to a research study. Besides, the delimitations and limitations may be included in method sections in an introduction. Structure of the report, on the other hand, is often excluded from journal articles.

2. Literature Review

- A literature review is a description of the literature relevant to a particular field or topic.
- The literature review asks how similar and related questions have been answered before.
- It gives an overview of what has been said, who the key writers are, what are the prevailing theories and hypotheses, what questions are being asked, and what methods and methodologies are appropriate and useful.

- Your literature might include Books, Journal Articles, Magazines and Newspapers, and sometimes other media such as Television and Radio depending on the nature of data your research demands.
- Bear in mind that Books and Text-Books are different. Usually, Text-Books are not preferred sources of literature for your research because they are “tertiary” sources of data.
- In other words, Text-Books are neither primary nor secondary sources of data collection.

- When compositing review of the literature, it is difficult to determine how much literature to review.
- The following suggestion may be followed for a quantitative of mixed methods study that employees a standard literature review section.
- For quantitative study, the literature review might explore aspects of the central phenomenon being addressed and divide in into topical areas.

- For a quantitative or mixed methods review, write a review of the literature that contains sections about the literature related to major independent variable, major dependent variables and studies that relate the independent and dependent variables.
- This approach seems appropriate for dissertations and for conceptualizing the literature to be introduced in a journal article.

- Consider literature review (in a dissertation or proposal) to be composed for five components;

a. an introduction,
b. topic 1 (about the in dependent variable),
c. topic 2 (about the dependent variable),
d. topic 3(studies that address both the in dependent and dependent variables), and
e. a summary.

Conceptual Framework

- A conceptual framework is described as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation.
- Such a framework should be intended as a starting point for reflection about the research and its context.
- The framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate this.

3. Methods

- The methods section is really **the heart of the** research proposal.
- You must decide exactly how you are going to achieve your stated objectives

Writing the Method Section for Quantitative Studies

3.1. The setting /Study Area

- Briefly describe the organization, agency or community in which you will conduct your study.

- 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; and

✓ 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); and
- ✓ Issues of relevance to the central theme of your study.

3.2. The study design

- The study type may dictate certain research designs.
- More commonly, the study objectives can be achieved through a number of alternative designs.
- Describe the study design you plan to use.
- For example, say whether it is a cross sectional', 'before-and-after', experimental' or non-experimental' design, ….
- Justify why you have selected the design by briefly explaining the strength and weaknesses of the selected design.

- **3.3. Sample, population and participants**
- Under this section of the proposal:

✓ Identify the population in the study.

✓ Also state the size of this population, if size can be determined

✓ The means of identifying individuals in the population. That means where (sample frame) and how this information will be obtained;

✓ The size of the sample you are planning to select, and how have you determined this size; and

✓ An explanation of the sampling technique you are planning to use in the selection of the sample (simple random sampling, stratified random sampling, quota sampling etc.).

- A brief discussion of external validity is appropriate here, that is, you should state the degree to which you believe results will be generalizable from your sample to the population.

3.4. Variables in the study

- Identify the dependent and independent variables.
- Define the variables.
- Relate the variables, the research questions, and items on the survey instrument so that a reader can easily determine how the researcher will use the questionnaire items.
- Use a table and a discussion that cross-reference the variables, the questions or hypotheses, and specific survey items.

3.5. Instrumentation and measurement procedures

- This section should contain a discussion of your instrument and the details of how you plan to operationalise your major variables.
- Justify your choice of research tool, highlighting its strength 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 the standardized instrument in any way, describe and explain the changes you have made.
- For all instruments, you should briefly state how you will determine reliability and validity, report the results and discuss.
- For reliability, you must describe the methods you used and report results.

- A brief discussion of how you have addressed construct validity is essential.
- In general, you should try to demonstrate both convergent and discriminant validity.
- You must discuss the evidence in support of the validity of your measures.
- Ideally you should attach a copy of the research instrument to your proposal.

3.6. Sources of Data

- Primary sources
- Secondary sources

3.7. Data Analysis Plan

- In general terms, describe the strategy you intend to use for data analysis .
- Specify whether the data will be analysed manually or by computer.
- For computer analysis, identify the program and the statistical procedures you plan to perform on the data.
- The details of the statistical techniques and the rationales for using such techniques should be described.

Work schedule and Financial Budget

- 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.
- Keep some time towards the end as a 'cushion' in case the research process does not go as smoothly as planned.
- Develop a chart.

References and Bibliography

- Attach list of references and bibilography before appendix.
- Your bibliography might include Books, Journal Articles, Magazines and Newspapers, and sometimes other media such as Television and Radio depending on the nature of data your research demands.
- Bear in mind that Books and Text-Books are different. Usually, Text-Books are not preferred sources of literature for your research because they are “tertiary” sources of data.
- In other words, Text-Books are neither primary nor secondary sources of data collection.

Appendix

- As an appendix, attach your research instrument and other bulky information, if any.
- For a material to be attached as an appendix it should be very important to the research proposal.

B. Format for a Qualitative Proposal: The Method/ Procedures *Section*

- The topics in a proposal section on procedures are:

a. Characteristics of qualitative research,
b. The research strategy/study design,
c. The role of the researcher,
d. Steps in data collection and analysis,
e. Strategies for validity the accuracy of findings, and
f. Narrative structure.

3.1 The characteristics of qualitative research

- For many years, a proposal writer had to discuss the characteristics of qualitative research and convince audiences as to their legitimacy.
- Now, there seems to be some consensus as to what constitutes qualitative inquiry.
- Hence, this section is optional.

- Review the needs of potential audiences for the proposal, to decide about this section.
- Decide whether audience members are knowledgeable enough about the characteristics of qualitative research that this section is not necessary.
- If there is some question about their knowledge, present the basic characteristics of qualitative research in the proposal and possibly discuss a recent qualitative research Journal article (or study) to use as an example to illustrate the characteristics.

- The following lists of characteristics might be used :
- Qualitative research takes place in the natural setting.
- Qualitative research uses multiple methods that are interactive and humanistic.
- Qualitative research is emergent rather than tightly prefigured.
- Qualitative research is fundamentally interpretive.
- The qualitative researcher views social phenomena holistically.
- The qualitative researcher uses complex reasoning that is multi faceted, iterative, and simultaneous.

3.2 Strategies of inquiry/ Study Design

- Beyond these general characteristics are more specific strategies of inquiry.
- Many strategies may exist.

- Generally, qualitative researchers choose from among five possibilities, including:
  a. Ethnography
  b. Phenomenology
  c. Case study
  d. Grounded theory, and
  e. Narratives.

- These are used frequently today, and they represent an encompassing focus from narrow to broad.
- For example, researchers might study:
- Individuals (narrative, phenomenology);
- Explore processes, activities, and events (case study, grounded theory); or
- Learn about broad culture-sharing behavior of individuals or groups (ethnography).

- **In writing this section of the proposal, the tasks listed below are recommended.**

a. Identify the specific strategy of inquiry that will be used.

b. Provide some background information about the strategy, such as its discipline origin, the applications of it, and a brief definition of it.

c. Discuss why it is an appropriate strategy to use in the proposed study.

3.3 The researcher's role

- As mentioned in the list of characteristics, qualitative research is interpretative research, with the inquirer typically involved in a sustained and intensive experience with participants.
- This introduces a range of strategic, ethical, and personal issues in to the qualitative research process.
- With these concerns in mind, inquirers explicitly identify their biases, values, and personal interests about their research topic and process.

- Gaining entry to a research site and the ethical issues that might arise are also elements of the researcher's role.
- Comment on connections between the researcher and the participants and on the research sites.

- Indicate sites taken to obtain permission from to protect the rights of human participates. Attach, as an appendix, the approval letter and discuss the process involved in securing permission.
- Discuss steps taken to gain entry to the setting and to secure permission to study the information's or situation.
- Comment about sensitive ethical issues that may arise.

3.4 Data collection procedures

- The data collection steps include setting the boundaries for the study, collecting information through unstructured (or semi-structured observations and interviews, documents, and visual materials, as well as establishing the protocol for recording information.
- Identify the purposefully selected sites or individuals for the proposed study.

- A discussion about participants and site might include four aspects:
- the setting (where the research will take place),
- the actors (who will be observed or interviewed),
- the events (what the actors will be observed or interviewed doing), and
- the process (the evolving nature of events undertaken by the actors within the setting).

- Further, indicate the type or types of data to be collected.
- In many qualitative studies, inquirers collect multiple forms of data and spend a considerable time in the natural setting gathering information.
- In a discussion about data collection forms, be specific about the types and include arguments concerning the strengths and weaknesses of each type.

3.5 Data recording procedures

- Before entering the field, qualitative researchers plan their approach to data recording.
- The proposal should identify what data the researcher will record and the procedures for recording data.
- **Use an observational protocol** for recording observational data.
- Researchers often engage in multiple observations during the course of a qualitative study and use a protocol or form for recording information.

- This **observational protocol** may be a single page with a dividing line down the middle to separate descriptive notes (portraits of the participants, a reconstruction of dialogue, a description of the physical setting, accounts of particular events, or activitieso from reflective notes (the researcher's personal thoughts, such as "speculation, feelings, problems, ideas, hunches, impressions, and prejudices").
- Also written on this form might be demographic information about the time, place, and data of the field setting where the observation takes place.

- **Use an interview protocol** for recording information during a qualitative interview.
- This protocol includes the following components; a heading, instructions to the interviewer (opening statements, the key research questions, probes to follow key questions, transition messages for the interviewer, space for recording the interviewer's comments, and space in which the researcher records reflective notes.

- Researchers record information from interviews using handwritten notes, audio taping, or videotaping. During the interview, the researcher should take notes in the event that recording equipment fails. Planning in advance whether a transcriptions will be used is important.
- The recording of **documents and visual materials** can be based on the researcher's structure for taking notes. Typically, notes reflect information about the document or other material as well as key ideas in the documents. For documents, it is helpful to note whether the information represents primary material (i.e., information directly from the people or situation under study) or secondary material (i.e., secondhand accounts of the people or situation written by others).

3.6 Data Analysis And interpretation

- Discussion of the plan for analyzing the data might have several components.
- The process of data analysis involves making sense out of text and image data.
- It involves **preparing the data for analysis**, **moving deeper and deeper into understanding the data**, **representing the data**, and **making an interpretation** of the larger meaning of the data.

3.7 Validating the accuracy of findings

- Although validation of findings occurs through the steps in the process of research, this discussion singles it out in order to emphasize its importance.
- Proposal developers need to convey the steps they will take in their studies to check for the accuracy and credibility of their findings.

- Validity is used to suggest determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers.
- Terms such as “trustworthiness,” “authenticity,” and “credibility”, are interchangeably used.

C. Format for a Mixed Method Proposal: Method Section

- 3.1 ***The Nature Of Mixed Methods Reseach***
- Because mixed methods research is relatively new in the social and human sciences as a distinct research approach, it is useful to convey, in a proposal, a basic definition and description of the approach.
- This might include the following:
- Trace a brief history of its evolution.
- Define mixed methods research by incorporating the definition that focused on collecting and analyzing both quantitative and qualitative data in a single study.
- Highlight the reasons why researchers employ a mixed methods design.
- Briefly discuss the growth of interest in mixed methods research.
- Note the challenges this form of research poses for the inquirer.

- **3.2 Study Design/ Strategy**
- Proposal developers need to convey the specific strategy for data collection they plan to use.
- Based on the following four decision criteria, electing a mixed methods strategy of inquiry would take place:
- 1. What is the implementations sequence of the quantitative and qualitative data collection in the proposed study?
- 2. What priority will given to the quantitative and qualitative data collection and analysis?
- 3. At what stage in the research project will the quantitative and qualitative data and findings be integrated?
- 4. Will an overall theoretical perspective (e.g., gender, race/ethnicity, lifestyle, class) be used in the study?

- Six designs/strategies are organized around whether the data are collected
  a. sequentially (explanatory and exploratory),
  b. concurrently (triangulation and nested), or with a
  c. transformative lens (sequential or concurrent).
- Each model has strength and weaknesses, although the sequential approach is the easiest to implement.

Data collection procedures

- Although the visual model and the discussion about the specific strategies provide a picture of the procedures, it is helpful in a proposal to discuss the specific types of data to be collected.
- It is also important to identify the sampling strategies and the approaches used to establish validity of the data.

- Identify and be specific about the type of data-both quantitative and qualitative-that will be collected during the proposed study.
- Quantitative and qualitative data differ in terms of open-ended versus closed-ended responses.
- Some forms of data, such as interviews and observations, can be either quantitative or qualitative.
- Although reducing information to numbers is the approach used in quantitative research, it is also used in qualitative research.

- Recognize that quantitative data often involve random sampling, so that each individual has an equal probability of being selected and the sample can be generalized to the larger population.
- In qualitative data collection, purposeful sampling is used so that individuals are selected because they have experienced the central phenomenon.

- Rate the procedures specifically to the visual model.
- If possible, the general procedures of the models can be detailed further.
- For example, in a sequential explanatory model, the discussion might include describing the use of survey data collection followed by both descriptive and inferential data analysis in the first phase. Then qualitative observations and coding and thematic analysis within an ethnographic design might be mentioned for the second phase.

Data analysis and validation procedures

- Data analysis in mixed methods research relates to the type of research strategy chosen for the procedures.
- Thus, in a proposal, the procedures need to be identified within the design.
- However, analysis occurs both within the quantitative (descriptive and inferential numeric analysis) approach and the qualitative (description and thematic text or image analysis) approach, and often between the two approaches.
- Some of the more popular approaches are the following:

- Data transformation:
- In the concurrent strategies, a researcher may quantify the qualitative data.
- This involves creating codes and themes qualitatively, then counting the number of times they occur in the text data (or possibly the extent of talk about a code or theme by counting lines or sentences).
- This quantification of qualitative data then enables a researcher to compare quantitative results with the qualitative data.

- Alternatively, an inquirer may qualify quantitative data.
- For instance, in a factor analysis of data from a scale on an instrument, the researcher may create factors or themes that then can be compared with themes from the qualitative database.

- Explore outliers:
- In a sequential model, an analysis of quantitative data in the first phase can yield extreme or outlier cases.
- Follow up qualitative interviews with these outlier cases can provide insight about why they diverged from the quantitative sample.

Instrument development:

- In a sequential approach, obtain themes and specific statements from participants in an initial qualitative data collection.
- In the next phase, use these statements as specific items and the themes for scales to create a survey instrument that is grounded in the views of the participants.
- A third, final phase might be to validate the instrument with a large sample representative of a population.

- Examine multiple level:
- In a concurrent nested model, conduct a survey at one level (eg with families) to gather quantitative results about a sample.
- At the same time, collect qualitative interviews(e.g with individuals) to explore the phenomenon with specific individuals in families.

- Another aspect of data analysis in mixed methods research to describe in a proposal is the series of steps taken to check the validity of both the quantitative data and the accuracy of the qualitative findings.
- Writers on mixed methods advocate for the use of validity procedures for both the quantitative and qualitative phases of the study.
- The proposal writer discusses the validity and reliability of the scores from past uses of instruments employed in the study.

- In addition, potential threats to internal validity for experiments and surveys are noted.
- For the qualitative data , the strategies that will be used to check the accuracy of the findings need to be mentioned.
- These may include triangulating data sources, member – checking, detailed description, or other approaches.

structure for the report

- The structure for the report, like the data analysis, follows the type of strategy chosen for the proposed study.
- Because mixed methods studies may not be familiar to audiences, it is helpful to provide some guidance as to how the final report will be structured.

- For a sequential study mixed methods, researchers typically organize the report of procedures in to quantitative data collection and quantitative data analysis followed by qualitative data collection and analysis.
- And then present the project as two distinct phases, with separate headings for each phase.

- In a concurrent study, the quantitative and qualitative data collection may be presented in separate sections, but the analysis and interpretation combines the two forms of data to seek convergence among the results.
- The structure of this type of mixed methods study does not as clearly make a distinction between the quantitative and qualitative phases.

- In a transformative study , the structure typically involves advancing the advocacy issue in the beginning of the study and then using either the sequential or concurrent structure as a means of organizing the content of the study.
- In the end of the study, a separate section may advance an agenda for change or reform that has developed as a result of the research.

Summary

- In designing the procedures for a mixed methods study, begin by conveying the nature of mixed methods research.
- This includes tracing its history, defining it, and motioning its applications in many fields of research.
- Then state and employ four criteria to select in appropriate mixed methods strategy.

a. Indicate the implementation strategy for data collection (Concurrent or sequential).
b. Also state the priority or weight given to the quantitative or quantitative approach in the study, such as equal weight, or a priority to quantitative or qualitative data.
c. Mention the phase of research (e.g., data collection, analysis, interpretation) in which integration of the approaches will occur.
d. Finally, identify whether a theoretical lens or framework will guide the study, such as a theory from the social sciences or a lens from and advocacy perspective (e.g., feminism, racial perspective).

- These four factors help in choosing the strategy to use.

Summary

- Any research project requires planning so that the researcher's time is used efficiently in pursuance of the research objectives.
- Much effort can be wasted and frustration incurred by haphazard reading and collecting of notes and references, sundry information and opinions.
- This form of activity might be 'very interesting', but leads in no particular direction and hence does nothing to advance the progress of the research.

- Research planning and architectural planning have much in common.
- Each requires a conceptualization of the overall organization and a detail plan before work on the project can begin.
- For successful completion, a building requires plans that are clearly conceived and accurately drawn.
- A research project should be no less totally visualised and precisely detailed.

- It is helpful to consider how to write a research proposal before actually engaging in the process.
- Consider the nine arguments as the key elements to include and then use one of the three topical outlines provide to craft a though qualitative, quantitative, or mixed methods proposal.

- During the writing process, begin putting words down on think through ideas, establish the habit of writing on a regular use strategies such as applying consistent terms, different level of positive thoughts, and coherence to strengthen writing.
- Writing in the voice, using strong verbs, and revising and editing will help as well.

Assignment(30%)

- Identify your own research topic and develop a full-fledged research proposal.
- Submission date ….

Chapter 3

Formulating Research Problem, Reviewing Literature and Formulating Hypothesis

3.1. Research Problem

3.1.1.Meaning of 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.
- A problem might be defined as the issue that exists in the literature, theory, or practice that leads to a need for the study.

Cont'd…

- A research problem refers to some difficulty which a researcher experiences in the context of either a theoretical or practical situation and wants to obtain a solution for the same.
- Generally speaking a research problem is a situation that needs a solution and for which there are possible solutions.
- If a situation has no possible solutions then it makes little or no sense expending resources researching it.

- Take this statement, “everybody wants to go to heaven but nobody wants to die”.
- Dying looks like a problem that needs a solution yet there is no possible solution to it. People must die. A research on how people can live forever makes little or no sense.
- A research problem may be described as an incongruence; a discrepancy between what is and what ought to be.
- It may be also described as the gap in knowledge that needs to be filled.

3.1.2. Formulating (Definition and Statement) of the problem

- A problem statement is the description of an issue currently existing which needs to be addressed.
- It provides the context for the research study and generates the questions which the research aims to answer.
- The statement of the problem is the focal point of any research.
- Formulating a research problem is the first and most important step in the research process.
- Problem formulation is like determination of the destination before undertaking a journey.

Cont'd…

- To define a problem means to put a fence round it, to separate it by careful distinctions from like questions found in related situations of need.
- Defining a problem involves the task of laying down boundaries within which a researcher shall study the problem.

Cont'd

- Techniques involved in defining a problem include:

✓ **Statement of the problem in a general way**

✓ **Understanding the nature of the problem**

✓ **Surveying the available literature**

✓ **Developing the idea through discussion**

✓ **Rephrasing the research problem.**

- A general template for writing a statement of the problem to a proposal or research study is known as **the deficiencies model.**
- According to the model, there are five key components found in all statement of the problem, regardless of approach to research.
- This include:

a. Establishing the problem leading to the study,
b. Reviewing the literature about the problem
c. Identifying deficiencies in the literature about the problem targeting an audience,
d. Noting the significance of the problem for this audience, and
e. Identifying the purpose of the proposed study.

The Research Problem in the Study

- When researchers begin their studies, they start with one or more paragraphs that convey the specific research problem or issues.
- They also present, in the first sentence, information to create reader interest.
- In the sentences that follow the first sentence, authors identify a distinct research problem that needs to be addressed.

- The first sentence accomplishes both objectives: pique interest in the study and conveying a distinct research problem or issue.
- This sentence would it entice a reader to read on.
- It should be pitched at a level so that a wide audience could understand it.
- Opening sentences are called narrative hooks, a term drawn from English composition, to draw or “hook” the reader into the study.
- It is as similar as the opening sentence in leading journals in different fields of study.

- Beyond this first sentence, it is important to clearly identify for the reader the issue or problem that leads to a need for the study.
- In applied social science research, problems arise from issues, difficulties, and current practices.
- For example, schools may not have implemented multicultural guidelines, or a community needs to better understand the contributions of tourism industry.
- These are all significant research problem that merit further study and establish a practical issue or concern that needs to be addressed.
- A research problem is the issue that exits in the literature, in theory, or in practice that leads to a need for the study.

- The research problem in a study begins to become clear when the researcher, asks
- “What is the need for this study?” or
- “What problem influenced the need to undertake this study?”

- When designing the opening paragraphs of a proposal, keep in mind these guidelines:

a. Write an opening sentence that will stimulate reader interest as well as convey an issue to which a broad audience can relate.

b. As a general rule, refrain from using quotations, especially long ones, in the lead sentence. Quotations raise many possibilities for interpretation and thus create unclear beginnings. However, as is evident in some qualitative studies, quotations can create reader interest.

c. Stay away from idiomatic expressions or trite phrases (e.g., "The lecture method remains a 'sacred cow' among most college and university instructors.").

d. Consider numeric information for impact (e.e., “Every year an estimated 5 million Americans experience the death of an immediate family member.”).
e. Clearly identify the research problem (i.e., dilemma, issue) leading to the study.
f. Researchers might ask themselves. “Is there a specific sentence (or sentences) in which I convey the research problem?”
g. Indicate why the problem is important by citing references that justify the need to study the problem.
h. Make sure that the research problem is framed in a manner consistent with the approach to research in the study (e.g., exploratory in qualitative, examining relationships or predictors in quantitative, and either approach in mixed methods inquiry).

Review Studies Addressing the Problem

- After establishing the research problem in the opening paragraphs, next justify the importance of the research problem by reviewing studies that have examined the problem.
- Simply present the major categories of studies about the problem at hand.
- Do not review single, isolated studies; instead, introduce larger groups of studies so that at this point they could present the broader picture of the literature.
- It is in the "literature review" section that one finds detailed reviews of studies.

- The purpose of reviewing studies that have addressed the problem is to justify the importance of the study and to create distinctions between past studies and a proposed study.
- This component might be called “setting the research problem within the ongoing dialogue in the literature.”
- Researchers do not want to conduct a study that explicates exactly what someone else has studied.
- New studies need to add to the literature or to extend or retest what others have examined.

- To review the literature related to the research problem for a statement of the problem, consider these ideas:

a. Refer to the literature by summarizing groups of studies (unlike the focus on single studies in the integrated review), not individual studies. The intent should be to establish broad areas of research at this juncture in the study.

b. To de-emphasize single studies, place the in-text references at he end of a paragraph or at the end of a summary point about several studies.

c. Review research studies that used a quantitative, qualitative, or mixed methods approach.

d. Find recent literature to summarize (such as the published in the last 10 years) unless an older study exists that has been widely cited by others.

Deficiencies in Past Literature

- After advancing the problem and reviewing the literature about the problem, the researcher then identifies deficiencies found in this literature.
- It is based on this element that this template is known as a deficiencies model for writing an statement of the problem for a study.

- The nature of these deficiencies varies from study to study.
- The literature may be deficient because the authors have not studied specific variables.
- They may not have explored the topic with a particular group, shape, or population.
- The literature may need to be replicated or repeated to see if the same findings hold given new samples of people or new sites for study.
- In any given study, authors may mention one or more of these deficiencies.

- If other authors have also mentioned these deficiencies-typically in the “suggestions for future research” sections at the end of research studies – then this section can include references to these studies as further justification for the proposed study.
- Beyond mentioning the deficiencies, proposal writers need to tell how their planned study will remedy or address these deficiencies.
- For example, because past studies have overlooked an important variable, a study will include and analyze its effect.
- Because past studies have overlooked the examination of public service organizations as a group, a study will include them as the participants in the project.

- In summary, when identifying deficiencies in the past literature, proposal developers might do the following:

a. Cite several deficiencies to make the case even stronger for a study.
b. Identify specifically the deficiencies of other studies (e.g., methodological flaws, variables overlooked).
c. Write about areas overlooked by past studies, including topics, special statistical treatments, siginificant implications, and so forth.
d. Discus how a proposed study will remedy these deficiencies and provide a unique contribution to the scholarly literature.

- These deficiencies might be written using series of short paragraphs that identify three or four shortcomings of the past research or focus on one major shortcoming.

Importance of a Study for an Audience

- All good writers have the audience in mind.
- They end their introduction by mentioning how the audiences use the information of the study.
- Authors need to identify the audiences that will likely profit from a study of the research problem.
- The more audiences that can be mentioned, the greater the importance of the study and the more it will be seen by readers to have wide application.
- These audiences will differ from one project to another, and they might include diverse audiences of policy makers, organizations, other researchers, an individuals in work organizations.

- **Finally**, good statement of the problem to research studies end with a statement of the purpose or intent of the study.

3.1.3. Importance of Formulating a Research Problem

a) It determines the research destine. It indicates a way for the researcher. Without it, a clear and economical plan is impossible.
b) Research problem is like the foundation of a building. The research problem serves as the foundation of a research study: if it is well formulated, one can expect a good study to follow.

Cont'd

c) The way you formulate your research problem determines almost every step that follows: the type of study design that can be used; the type of sampling strategy that can be employed; the research instrument that can be used; and the type of analysis that can be undertaken.

d) The quality of the research report (output of the research undertakings) is dependent on the quality of the problem formulation.

e) It establishes the importance of the topic.

f) It creates reader interest.

g) It focuses the reader's attentionon how the study will add to the literature.

3.2.Literature Review

3.2.1. What is a Literature Review?

- Literature review is *not a compilation of every work written about a* topic.
- It is *not simply a list of sources reviewed separately for their* own merit.
- A literature review is a description of the literature relevant to a particular field or topic.
- Is one of the essential preliminary tasks of a researcher.

Cont'd…

- It gives an overview of what has been said, who the key writers are, what are the prevailing theories and hypotheses, what questions are being asked, and what methodologies are appropriate and useful.
- Obviously, the amount of available literature can differ significantly depending on the topic area being studied.
- Often it is a time-consuming, and difficult process if there has been a great deal of research conducted in a particular area

3.2.2. Reasons for reviewing the literature

A literature review has three functions. It helps you to:

1. **Bring clarity and focus to your research problem**

- The literature review can play an extremely important role in shaping your research problem because the process of reviewing the literature helps you to understand the subject area better and thus helps you to conceptualize your research problem clearly and precisely.

2. Improving the Methodology

- Going through the literature acquaints you with the methodologies that have been used by others to find answers to research questions similar to the one you are investigating.
- It tells you if others have used procedures and methods similar to the one that you are proposing, which procedures and methods have worked well for them, and what problems they have faced with them and hence you can take care of those problems.

3.Broadening the researcher knowledge in the research area

- The most important function of the literature review is to ensure you read widely around the subject area in which you intend to conduct your research study.
- It is important that you know what other researchers have found in regard to the same or similar questions, what theories have been put forward and what gaps exist in the relevant body of knowledge.

Cont'd…

- Besides it helps the researchers to know what types of studies have been conducted in particular areas so they can determine whether their specific research questions have already been answered.
- However, it is certainly a legitimate goal of research to replicate the results of other studies
- But, there is a difference between replicating a study for purposes of establishing the robustness or generalizability of the original findings and simply duplicating a study.

Contd.

- In the second case, you need to consider changing your research topic or its focus.
- In most business-related research, it is very rare that a specific set of research questions or a specific hypothesis has already been addressed in your specific topic area.

3.2.3. Procedures in reviewing the literature

- Reviewing a literature is a continuous process.
- Often it begins before a specific research problem has been formulated and continues until the report is finished.

Cont'd

- There are four steps involved in conducting a literature review:
  - Search for existing literature in your area of study
  - Review the literature selected
  - Develop a theoretical framework
  - Develop a conceptual framework.
- The skills required for these tasks are different. Developing theoretical and conceptual frameworks are more difficult than the other tasks.

Cont'd

Search for Existing Literature

- Effectively search for literature in your field of inquiry.
- Next compile a bibliography.

Cont'd

- There are two sources that you can use to prepare a bibliography:

✓ Books ; and

✓ Journals

- The best way to search for a book is to look at a library catalogues

Cont'd

- There are several sources designed to make your search for journals easier and these can save enormous time. They are:
- **Indices of journals** e.g SSRN, JSTOR, BLACKWELL, EMERALDS, ..
- **Abstract of articles** e.g. ERIC
- **Citation indices**, e.g. social sciences Citation Index

Cont'd

Review the selected Literature

- Now that 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 belong together.
- If you do not have a theoretical framework in mind, to start with, use separate sheets of paper for each article or book.

Cont'd

Develop a Theoretical Framework

- The information obtained from different books and journals needs to be sorted under the main themes and theories
- Highlight agreements and disagreements among the authors and identify the unanswered questions or gaps.
- Ask "What are the Main Theoretical Perspectives?"

Cont'd…

- It is critical that you are aware of all theories pertaining to your research topic, their strengths and their weaknesses
- In fact, it is often the case that the theoretical knowledge of a particular topic reveals gaps in our understanding of that topic—this often enables you to identify more important research questions.

- Researchers use theory in a quantitative study to provide an explanation or prediction about the relationship among variables in the study. A theory explains how and why the variables are related, acting as a bridge between or among the variables. Theory may be brad or narrow in scope, and researchers state their theories in several ways, such as a series of hypotheses, “if … then” logic statements, or visual models. Using theories deductively, investigators advance the theories at the beginning of the study in the literature review. They also include them with the hypotheses or research questions or place them in a separate section. A script can help design the theory section for a research proposal.

- In qualitative research, inquirers employ theory as a broad explanation much like in quantitative research, such as in ethnographies. It may also be a theoretical lens or perspective that raises questions related to gender, class, or race, or some combination. Theory also appears as an end point of a qualitative study, a generated theory, a pattern, or a generalization that emerges inductively from data collection and analysis. Grounded theories, for example, generate a theory "grounded" in the views of participants and place it as the conclusion or their studies. some qualitative studies do not include an explicit theory and present descriptive research of the central phenomenon.

- Mixed methods researchers used theory either deductively (as in quantitative research) or inductively (as in qualitative research).
- Writers also are beginning to identify the use of theoretical lenses or perspectives (e.e., related to gender, lifestyle, race/ethnicity, and class) in their mixed methods studies.
- a transformational-emancipatory design incorporates this perspective, and recent developments have identified procedures for incorporating this perspective into all phases of the research process.

Develop a Conceptual Framework

- Whatever the research topic that you have identified, you need to construct a conceptual framework within which you will study the topic.
- The conceptual framework stems from the theoretical framework and concentrates, usually, on one section of the theoretical framework.
- It describes the aspects you selected from the theoretical framework to become the basis of your study.
- It is the basis for your research problem.

Types of literature review

a. Evaluative Review

- This type of literature review focuses on **providing a discussion of the literature in terms of its coverage and contribution to knowledge** in a particular area.
- It is often used to directly **compare research findings** from different researches.
- An example of this type of review is **meta-analysis** which provides a **comprehensive commentary** on a very large number of research projects focused on a **specific topic.**

b. Exploratory Review

- This is a literature review which is seeking to **find out what actually exists in the academic literature in terms of theory, empirical evidence and research methods** as they pertain to a specific research topic and its related wider subject area

c. Instrumental Review

- This is where the literature is used **exclusively as a source of information on how to conduct some research** on a highly specific research problem.
- It is not designed to identify the state of current knowledge in an area but to identify the best way to carry out a research project without incurring unnecessary and avoidable costs.

Assessing the quality of literature

- It is not easy to assess if a piece of published work is of high, medium or low quality until you actually read it and are able to compare it with other works you have read.
- Ask yourself the following questions:

- Do you know who wrote the article?
- Are the sources for any **factual information clearly listed** so that they can be verified in another source?

cont'd…

- Is the information **free of** grammatical, spelling and other typographical **errors?** (These kinds of errors not only indicate a lack of quality control, but can actually produce inaccuracies in information.)
- If there are charts and/or graphs containing statistical data, are the charts and/or graphs clearly labeled and easy to read?
- **Is it clear when the work was published?**

Finally, ….

- Literature pertinent to your study deal with two types of information:
- Universal; and
- More specific, i.e., local trends or a specific program.
- In writing about such information you should start with the general information, gradually narrowing it down to the specific.

Literature reveiws in qualitative, quantitative, and mixed methods research

Literature Reviews in Qualitative Studies

- In qualitative research, inquirers use the literature in a manner consistent with the assumptions of learning from the participant, and not prescribing the questions that need to be answered from the researcher's stand point.

- One of the chief reasons for conducting a qualitative study is that the study is exploratory.
- This means that not much has been written about the topic or the population being studied, and the researcher seeks to listen to participants and build an understanding based on their ideas.
- However, the use of the literature in qualitative research varies considerably.

- In theoretically oriented qualitative studies such as ethnographies or critical ethnographies, the literature on a cultural concept or a critical theory from the literature is introduced by researchers early in a study as an orienting framework.
- In grounded theory studies, case studies, and phenomenological studies, literature will serve less to set the stage for the study.

- With an approach grounded in learning from participants and variation by type of qualitative research, there are several models for incorporating the literature in a qualitative study.
- Three placement locations are commonly used.
- A literature review can be used in any or all of these locations.

a. Literature might be included in the introduction to a study section.

- In this placement, the literature provides a useful backdrop for the problem or issue that has led to the need for the study, such as who has been writing about it, who has studied it, and who has indicated the impotence of studying the issue.
- This "framing" of the problem is, of course, contingent on available studies.

b. A second form is to review the literature in a separate section

- This approach often appears when the audience consists of individuals or readers with a quantitative orientation.
- Commonly used in theory-oriented qualitative studies, such as ethnographies and critical theory studies or studies with an advocacy or emancipator aim.
- The inquirer presents the theory discussion and literature in a separate section , typically towards the beginning of the study.

c. Third, the research may incorporate the related literature in the final section of the study, where it is used to compare and contrast with the result (or themes or categories) that emerged from the study.

- This model is especially popular in grounded theory studies.
- It is often recommended because it uses the literature inductively.

Literature Reviews in Quantitative studies

- In quantitative studies, literature is used deductively as a basis for advancing research questions or hypotheses.
- In quantitative studies, literature is often used at the beginning of a study to introduce a problem / the study, describe related literature in a separate section, or compare extant literature with findings of the present study.

a. A substantial amount of literature would be used at the beginning of a study to provide direction for the research questions or hypotheses.
b. If a separate “review of the literature” is used, consider whether the review will consist of integrative summaries, theoretical reviews, or methodological reviews.

i. Integrative literature reviews refers with the researchers summarizing broad themes in the literature.

ii. A theoretical review is where the researcher focuses on extant theory that relates to the problem under study. This often appears in journal articles in which the author integrates the theory into the introduction to the study.

iii. A methodological review refers when the researcher focuses on methods and definition.

- In a nutshell:
- These all review types should provide not only a summary of studies but also an actual critique of the strengths and weaknesses of the method sections.
- A typical practice in thesis writing is to advance an integrative review.

c. The literature would also be included in the end of a study in which the researcher compares the results of the study with the existing findings in the literature.

Literature review in mixed methods study

- In a mixed methods study, the researcher uses either a qualitative or a quantitative approach to the literature depending on the type of mixed method design being used.
- The approach to literature use in mixed methods project depends on the type of strategy and the relative weight given to the qualitative or quantitative research in the study.
- In a sequential design, the literature is presented in each phase in a way consistent with the type of design being used in that phase.

- For example, if the study begins with a quantitative phase, then the investigator is likely to include a substantial literature review that helps to establish a rational for the research questions or hypotheses.
- If the study begins with a qualitative phase, then the literature is substantially less, and the researcher may incorporate it more into the end of the study- an inductive approach to literature use.

- If the researcher advance a concurrent study with an equal weight and emphasis on both qualitative and quantitative data, then the literature may take either qualitative or quantitative forms.

A priority for Resources in the Literature

- Researchers shall establish a priority in a search of the literature.
- What types of literature might be reviewed, and in what priority?
- Consider the following:

1. Especially if you are examining a topic for the first time and are unaware of the research on it, start with broad syntheses of the literature, such as overviews found in encyclopedias . You might also look for summaries of the literature on your topic presented in journal articles or abstract series . (e.g., Annual Review of .....

2. Next turn to journal articles in respected journals, especially those that report research studies.
   - Start with the most recent studies about the topic and then work backward in time.
   - In these journal articles, follow up on references at the end of the articles for more sources to examine.

3. Turn to books related to the topic.

- Begin with research monographs that summarize the scholarly literature, then consider entire books that are on a single topic or contain chapters written by different authors.

4. Follow this search by looking for recent conference papers on a topic, often conference papers report the latest research developments.
- Look for major, national conferences and the papers delivered at them.
- Make contact with authors of studies.
- Seek them out at conferences.
- Write or phone them asking if they know of studies related to the proposed study and inquire if they have an instrument that might be used or modified for use in your study.

5. If time permits, look at the abstract of thesis and dissertations.

- Dissertations vary immensely in quality, and one needs to be selective in examining these studies.

6. Web site articles and research studies also are useful materials.

- Reviewers may not have evaluated and screened these articles for quality, and one needs to be cautious bout whether they represent rigorous, thoughtful and systematic research for use in a literature review.

Referencing, Quotations and Citation

- **Plagiarism and Self-Plagiarism**
- Plagiarism is the use of another person's ideas or words without giving them the proper credit.
- Plagiarism can occur when you use someone else's exact words without giving them credit, taking credit for someone else's ideas, or even presenting your own past work as a new idea.
- Academic institutions take both intentional and unintentional plagiarism seriously, and it can be grounds for dismissal.
- The best method of avoiding plagiarism is to cite the ideas, theories, and research that directly influenced your work, cite key background information, information that may support or dispute your theory or hypothesis, or offer critical definitions or data.
- Document all facts and figures that are not common knowledge.

In-Text Citations

- Citations used in the body of your publication identify the source of information.
- In-text parenthetical citations are used to give credit to the authors whose ideas or thoughts are used within the document.
- These internal citations allow the reader to identify the source and locate the information being addressed.
- APA uses a system that includes the author's last name and the year of publication.
- For example: (Small, 2009). If there is a direct quote or a specific part of the work is being referred to, the page numbers are also included.
- For example, (Small, 2009, p. 23).
- Sources may include books and book chapters, journal or magazine articles, dissertations and theses, conference papers, government reports, films, websites, blogs and wikis, discussion boards, personal communications, and more.

Paraphrasing

- Paraphrasing is used when you take someone else's direct quote and state their idea in your own words.
- **Changing a few words here and there is still considered plagiarism even if you do cite the author.**
- **Paraphrasing means that you expressed the author's information or ideas in your** own words and have given that person credit for that information or idea. You can prevent plagiarism by closing the document and restating the idea in your own words.

- Notice in this example how the paraphrased version made changes to more than 50% of the original wording:
- 1. **Original Passage: "Signed into law in January 2002 by President George W. Bush,** the No Child Left Behind (NCLB) Act signaled the nation's most sweeping education reform of federal education policy in decades" (Smith, 2008. p. 212).
- 2. **Unacceptable Paraphrasing: Enacted into law in 2002 by President Bush, the No Child** Left Behind Act signaled the most sweeping education reform of U.S. educational policy in decades.
- 3. **Paraphrased: According to Smith (2008), the No Child Left Behind Act (NCLB)** Act provided the most all-encompassing reform in U.S. education in almost half a century.
- or
- The No Child Left Behind Act (NCLB) Act provided the most all-encompassing reform in U.S. education in almost half a century (Smith, 2008)

- Paraphrases must include the name of the author and the year of publication of the original source. Including the page number in the text citation is optional.

Quoting Directly

- When you directly quote an author, you need to put the exact words of the author in quotation marks or follow the rules for a block quotation.
- Include the exact spelling and interior punctuation of the borrowed words.
- The author, year of publication, and page number(s) or paragraph number for non-paginated materials are always included in the text and a reference citation is included in the reference list.

- **Regular Quotes** -- Regular quotes are used when the quote is less than 40 words.
- McPherson (2007) coined the phrase “goblet of motivation” (p. 71).
- Keep the author and year of publication together.
- Use quotation marks to identify the exact words of the author.
- Include the page number in parentheses immediately after the direct quote.
- Place the period after the parentheses.

- **Block Quotes** – Block quotes are used for quotes of more than 40 words.
- Indent the block quote five spaces or half an inch.
- Do not use quotation marks.
- Double space the quote unless your school has a rule about single spacing block quotes.
- Do not include any additional lines or spaces before or after the block quote.
- Notice that in block quotes, the period goes before the parentheses, not after.

- **Citation Placement**
- Use the **author-date method of citation by inserting the surname of the author and the year of** publication at the appropriate point in the text.
- a. **Citations for Paraphrased Information**
- **Beginning of sentence**
- Krankenstein (2006) reported that empirical research verified compliance.
- **Middle of sentence**
- After looking into the issue, Lynch (2007) stated that the findings were not valid.
- **End of sentence**
- The report concluded were victims of cyberterrorism (Windhorst, 2004).

- **Citations with Direct Quotes**
- **Author and quote together**
- The principal stated clearly that students “needed parental permission to leave school” (Abbott, 2005, p. 25).
- **Author and quote separated**
- MacDougall (2004) stated that the “Information Literacy Model needed to be implemented” (p. 34).
- **Quote from non-paginated material**
- Winkowski (2007) stated, “The research is unreliable” (Conclusion section, para. 4).

- **Multiple Citations by the Same Author in Same Paragraph**
- When the same author is cited multiple times in the same paragraph and the author's name is part of the narrative, you need to include the year in subsequent non-parenthetical references to a resource.
- However, you do include the year in all parenthetical citations:
- A study by Tunon and Brydges (2007) found that the quality of the two sets of citations were comparable. The subjective rubric developed by Tunon and Brydges helped establish this. The study went on to show a difference between academic programs (Tunon & Brydges, 2007).

- **Multiple Authors for the Same Source**
- One author Smith (2007), (Smith, 2007)
- Two authors Smith and Thomas, (2007)
- (Smith & Thomas, 2007)
- Three to five authors Smith, Thomas, and Jones (2007)
- Parenthetical citation (Smith, Thomas, & Jones, 2007)
- Subsequent parenthetical citations (Smith, et al., 2007)

- Six or more authors Smith et al. (2007)
- Parenthetical citation (Smith et al., 2007)
- Subsequent parenthetical citations (Smith et al., 2007)
- Group authors American Psychological Association (APA, 2010)
- Subsequent citations in text (APA, 2010)
- Parenthetical citation American Psychological Association ([APA], 2010)
- Subsequent parenthetical citations (APA, 2010)

- **Multiple Authors for Different Sources**
- Different sources may be cited when referring to several representative sources used for a key point.
- List authors in alphabetical order within the same parentheses.
- Separate names with semicolons.
- If a work is in press, put that after the years of publication.

- **Example**: Empirical research shows that dissertations chairs think doctoral students have the necessary information literacy skills need to do the library research for the literature review (Boote & Beile, 2004, 2008, in press; Brydges & Tunon, 2005; Morner, 1997; Tunon & Brydges, 2007).

- **Citing a Secondary Source**
- It is always best to read the original or primary sources, but sometimes this is difficult if the original work was published in another language or was published in a book that is difficult to obtain.
- In such a case, you would need to cite the original or primary source in the text of the paper, but you would provide a reference in the reference list for the secondary source.
- **Example:** According the Skinner (as cited in Freud, 1923), Freud took the position ….

- **Personal Communications**
- Personal communications including conversations, phone calls, email messages, class lectures, interviews, and online chats should be paraphrased. Cite personal communications only in the text, give the initials as well as the surname of the communicator, and provide the exact date if possible.
- For example:
- According to S. Ramdial (personal communication, July 20, 2009), the book is ready. or
- The book is ready (S. Ramdial, personal communication, July 20, 2009).
- If the personal communication is recoverable, then the source should be cited as an archived material.

Formatting Citations in the Reference List

- ***Referencing Books***
- General notes about books: If name(s) are the first part of the citation, they are capitalized and listed— last name, then initials.
- Separate names with a comma, and use an ampersand (&) before the last author.
- Use Ed. for one editor, Eds. for multiple editors.
- Capitalize the first word in titles and subtitles, and proper names.
- Place of publication should include the city name and two letter state abbreviation.
- A book is referenced by writing name of the authors, year of publication in bracket, *title of the book (in italics), edition, publisher, and place of publication respectively.*

- If you are citing a book chapter or section
- you must indicate the pages.
- Use p. for a single page and pp. for multiple pages.
- Put a space after the p. and put a - (dash) between the numbers with no space before or after the hyphen.

- **- Ex: Book by a single author.**
- Author's name. (Year). *Title of book. Place of publication: Publisher.*
- Chitty, D. (2003). *Do lemmings commit suicide? Beautiful hypotheses and ugly facts. New York, NY:* Oxford University Press.
- **- Ex: Book by two or more authors.**
- Author's names. (Year). *Title of book. Place of publication: Publisher.*
- Rosellini, G., & Worden, M. (2004). *Of course you're angry: A guide to dealing with the emotions of substance abuse (Rev. ed.). Center City, MN: Hazelden.*

- **- Ex: Book by a group author with DOI**
- Group author. (Year). *Title of book. Place of publication: Publisher. doi:XXX.XXXXXXXX*
- Children's Express. (2009). *Voices from the future: Our children tell us about violence in America.* New York, NY: Crown. doi:10/1023/10452-000
- **- Ex: Book by an unknown author.**
- *Title of book. (Year). Place of publication: Publisher.*
- *The alternative medicine handbook. (1994). New York: Crescent Books.*

- **- Ex: Book that is a major classical work.**
- Reference list entries are not required for major classical works.
- These include ancient Roman and Greek works as well as classical religious works such as the Bible and the Koran.
- You do however identify the work the first time it is cited in the text.
- Because classical works are usually numbered systematically across all editions, use the numbers instead of pages when referring to specific parts of the text.

- **- Ex: Book with editors.**
- Editor's name. (Ed.). (Year). *Title of book. Place of publication: Publisher.*
- Moen, P., Elder, G., & Luscher, K. (Eds.). (1995). *Examining lives in context: Perspectives on the ecology of human development. Washington, DC: American Psychological Association.*

- **- Ex.: Electronic version of print book, title translated into English, book translated**
- If the online version refers to a print edition, include the edition number after the title.
- Freud, S. (1911*). The interpretation of dreams (3rd ed.).* *(A. A. Brill, Trans.). Retrieved from* http://www.psychwww.com/books/interp/toc.htm
- If the non-English work is used as the source, give the title in the original language and put the translated title in English. For example, **Die traumdeteun. [The interpretation of dreams].**

Periodicals – Journal, Magazine, and Newsletter Articles

- **General notes about periodical articles and documents:**
- **Names are listed last name, then** initials, if name(s) is the first element of the citation.
- Separate names with a comma, and an ampersand (&) before the last author.
- If there is no author, then the title of the article is first.
- **Dates–** Daily newspapers & newsletters: Use (Year, Month Day). Monthly newspapers **&** magazines with no volume number: Use (Year, Month). Journals: Use (Year)
- **Titles–** Article titles: capitalize first word in titles and subtitles, and any proper names.
- **Journal titles–** Capitalize all words except articles and prepositions

- **Volume numbers and issue numbers** – Do not use vol. for volume or no. for issue number.
- The volume number is italicized while the issue number is not. The issue number is enclosed in parentheses and follows immediately after the volume number with no space. Follow the parentheses with a comma.
- **Pages**– Newspapers: use p. for one page, pp. for two or more pages. However, for magazines and journals, Do not use p. or pp. before page numbers. Follow the page number(s) with a period.

Referencing Journal Articles

- **General notes about periodical articles and documents:** Names are listed last name, then initials, if name(s) is the first element of the citation. Separate names with a comma, and an ampersand (&) before the last author.
- If there is no author, then the title of the article is first.

- A journal article can be referenced by writing name of the authors, year of publication, 'title of article' (in single quotation marks), *title of the journal (in italics), volume* number, issue number, and page numbers.
- For example: Gebregziabher (2009b). Financing preferences of micro and small enterprise owners in Tigray: does POH hold? *Journal of Small Business and Enterprise Development, 16 (2), 322-334.*
- *If a journal* article has no author then it can be cited as follows: 'Building human resources instead of landfills' 2000. *Biocycle, 41 (12), 28–9.*

Referencing Magazines and Newspapers

- Magazine and newspaper articles can be used to support an empirical fact.
- Magazine articles are cited similar to that of journal articles except that the date of publication should be written.
- For example: Kluger, J. (2008, January 28). Why we love. *Time, 171* (4), 54-60. Newspaper article can be cited as: Tesfaye, K. (2010, September 10). Unchanged Trade Flows May Nullify Impact of Devaluation. *Addis Fortune, 11 (541).* Retrieved from http://www.addisfortune.com/economic_commentary.htm .

- Similarly, articles from web 2.0 services such as wikipedia can also be cited as: Research Funding. (2010, August 27). In *Wikipedia, the free encyclopedia. Retrieved, September 16, 2010,* from http://en.wikipedia.org/wiki/Research_funding.

Referencing Audio-Visual Media

- Sometimes, audio-visual media can also be referenced. Audio-visual references shall include the following: name and function of the primary contributors (e.g., producer, director), date, title, the medium in brackets, location or place of production, and name of the distributor.
- For example: Anderson, R., & Morgan, C. (producers). (2008, June 20). *60 Minutes [Television broadcast]. Washington, DC: CBS News.*

3.3. Hypothesis Formulation

3.3.2 The Meaning of Hypotheses

- The word Hypothesis is composed of two words, 'hypo' and 'thesis'.
- ***"Hypo"*** means under or below, and
- ***"Thesis"*** means a reasoned theory or rational view point.
- Thus hypothesis would mean a theory which is not fully reasoned.

meaning…Cont'd

- Hypothesis is a set of suggested tentative solution of a research problem.
- Hypothesis is a tentative statement about something, the validity of which is usually unknown.
- A hypothesis is a tentative proposition relating to certain phenomenon, which the researcher wants to verify when required.
- If the researcher wants to infer something about the total population from which the sample was taken, statistical methods are used to make inference.
- We may say that, while a hypothesis is useful, it is not always necessary.

3.3.2. Importance of Hypothesis

a) **It places clear and specific goals before the researcher.**

- These clear and specific goals provide the investigator with a basis for selecting samples and research procedures to meet these goals.

b) **It sensitizes the individual facts and conditions that might otherwise be overlooked.**

Importance… Cont'd

c) **It provides direction to research**

- It defines what is relevant and what is irrelevant.
- Thus it prevents the review of irrelevant literature and the collection of useless or excess data.
- It not only prevents wastage in the collection of data, but also ensures the collection of the data necessary to answer the question posed in the statement of the problem.

Importance… Cont'd

d) **It serves as a framework for drawing conclusions.**

- It makes possible the interpretation of data in the light of the tentative proposition.
- It provides the outline for setting conclusions in a meaningful way.

e) **It prevents blind research.**

- It prevents indiscriminate gathering of data which may later turnout to be irrelevant.

3.3.3.Characteristics of Good Hypotheses

- There are a number of considerations to keep in mind, as they are important, for valid verification, when constructing hypotheses.

a) **A hypothesis should be simple, specific, and conceptual clear**.

Characteristics… cont'd

b) **A hypothesis should be capable of verification.**

c) **A hypothesis should be related to the body of knowledge.**

Characteristics… cont'd

d) **A hypothesis should be operationalisable**.

- That is, it can be expressed in terms that can be measured. If it can not be measured, it can not be tested and hence no conclusions can be drawn.

Sources of hypothesis

- Hypothesis can be derived from many sources

1. Theory
2. Observation
3. Past experience
4. Case studies
5. Similarity

- 1) ***Theory:*** Theory on the subject can act as a source of hypothesis. We start of from a general premise and then formulate hypothesis.
- ***Example:*** Providing employment opportunity is an indicator of social responsibility of a government enterprise.
- From the above several hypothesis, it can be deduced that:-
- 1) Public enterprise has greater social concern than other enterprises.
- 2) Peoples perception of government enterprise is social concern.
- 3) Govt. enterprise help in improving the life of less privileged people.

- 2) ***Observation:*** Peoples' behaviour is observed.
- In this method we use observed behaviour to infer the attitudes.
- This an indirect method of attitude measurement.
- Direct observation is used to get insights into research behaviour and other related issues.

- ***Example:*** A shopper in a supermarket may be disguised, to watch the customer in the stores.
- The following may be observed.
  a. How the customer approaches the – Product category,
  b. How long he/she spends in front of display,
  c. Whether the customer had difficulty in locating the product.
- Collect all these data and formulate a hypothesis regarding the behaviour of the customer towards the product.

- 3) ***Past experience:*** Here researcher goes by past experience to formulate the hypothesis.
- ***Example:*** A dealer may state that fastest moving kids apparel is frock. This may be verified.
- 4) ***Case studies:*** Case studies published can be used as a source for hypothesis.

- 5) ***Similarity:*** This could be with respect to similarity in activities of human beings.
- Example: Dress, food habits or any other activities found in human living in different parts of the globe.

Types of Hypothesis

- There are several basis on which hypothesis are classified.
- **Commonly used are**
  - **Research Hypothesis**
  - **Null Hypothesis**

- This hypothesis states that there is no difference between the parameter and the statistic that is being compared is called n**ull Hypothesis**
- ***Example: There is no relationship between marks obtained in the examination and the*** success of the same student in the corporate world.
- Null hypothesis are framed for testing statistical significance.

Chapter 4

Study Design

5.1. Introduction

- Research design is the conceptual structure within which research is conducted; it constitutes the blueprint for collection, measurement and analysis of data.
- Research design can be thought of as the *structure* of research - it is the "glue" that holds all of the elements in a research project together.

5.2. The functions of a research design

- The research design has two main functions. It

1. Identifies and/or develops procedures and logistical arrangements required to undertake a study,
2. Improves the quality of procedures to ensure their validity, objectivity, and accuracy.

5.3 Different Research Designs

- Different research designs can be conveniently described if we categorize them as:
- (1) research design in case quantitative studies;
- (2) research design in case of qualitative studies, and
- (3) research design in case of mixed method research studies.

- A quantitative approach is one in which the investigator primarily uses postpositive claims for developing knowledge (i.e., cause and effect thinking, reduction to specific variables and hypotheses and questions, use of measurement and observation, and the test of theories),
- The investigator collects data on predetermined instruments that yield statistics data.

- The researcher tests a theory by specifying narrow hypotheses and the collection of data to support or refute the hypotheses.
- A study design in which attitudes are assessed both before and after an experimental treatment is often used.
- The data are collected on an instrument that measures attitudes, and the information collected is analyzed using statistical procedures and hypothesis testing.

- A qualitative approach is one in which the inquirer often makes knowledge claims based primarily on

a. constructivist perspectives (i.e., the multiple meanings of individual experiences meanings socially and historically constructed, with an intent of developing a theory or pattern) or

b. advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative, or change oriented) or

c. Both.

- In this type of approach, the researcher collect open-ended, emerging data with the primary intent of developing themes from the data.

- The researcher seeks to establish the meaning of a phenomenon from the view of participants.
- This means identifying a culture-sharing group and studying how it developed shared patterns of behavior over time (i.e., ethnography).
- One of the key elements of collecting data is to observe participants' behaviors by participating in their activities.
- Besides, the inquirer seeks to examine an issue related to oppression of individuals.
- To study this, the approach is taken of collecting stories of individuals oppression using a narrative approach.
- Individuals are interviewed at some length to determine how they have personally experienced oppression.

- A mixed methods approach is one in which the researcher tends to base knowledge claims on pragmatic grounds (e.g., consequence-oriented, problem-centered, and pluralistic).
- It employs strategies of inquiry that involve collecting data either simultaneously or sequentially to best understand research problem.
- The data collection also involves gathering both numeric information (e.g., on instruments) as well as text information (e.g., on interviews) so that the final database represents both quantitative and qualitative information.

- The researcher bases the inquiry on the assumption that collecting diverse types of data best provides on understanding of a research problem.
- The study begins with a broad survey in order to generalize results to a population and then focuses, in a second phase, on detailed qualitative, open-ended interviews to collect detailed views from participants.

5.3.1 Study Designs Associated with the quantitative Approach

- The various study designs in quantitative studies have been classified by examining them from **three** different perspectives.

a. The number of contacts with the study population.
b. The reference period of the study.
c. The nature of the investigation.

1. The number of contact

- Based on the number of contacts with the study population, study designs can be classified into three groups:

I. Cross-sectional studies

II. Before-and-after studies and

III. Longitudinal studies.

Cont'd

A. Cross-sectional studies

- also known as one-shot or status studies
- Study some phenomenon by taking a cross section (only once) of it at one time.
- are the most commonly used design in the social sciences.
- are best suited to studies aimed at finding out the prevalence of a phenomenon, situation, problem, attitude or issue.

Cont'd

- Such studies are cross-sectional with regard to both the study population and the time of investigation.
- As these studies involve only one contact with the study population, they are comparatively **cheap** to undertake and **easy** to analyze.
- Their biggest disadvantage, however, is that they **cannot measure change**.

B. The before-and-after study design

- A before-and-after design can be described as two sets of cross-sectional observations on the same population
- It is comprised of two cross-sectional observations, the second being undertaken after a certain period.
- also known as the **pretest/post-test design.**
- The main advantage of the before-and-after design is that it can **measure change.**

Cont'd…

- It is one of the most commonly used designs in evaluation studies (i.e., for measuring the impact or effectiveness of a program).
- The difference between the two sets of observations with respect to the dependent variable is considered to be the impact of the program.

Cont'd…

- The disadvantages are:

1. More expensive and more difficult to implement.
2. In some cases the time lapse between the two contacts may result in attrition in the study population.

Cont'd

3. As it measures total change, you cannot ascertain whether independent or extraneous variables are responsible for producing change in the dependent variable. Also, is it not possible to quantify the contribution of independent and extraneous variables separately.

Cont'd…

4. If the study population is very young and if there is a significant time lapse between the before-and-after observations, changes in the study population may be because it is maturing.

Cont'd

4. **Reactive Effect** :Sometimes the instrument itself educates the respondents. This is known as the **reactive effect** of the instrument.

Cont'd…

6. **Regression effect:** may occur when you use a research instrument twice to gauge the attitude of a population towards an issue is a possible shift in attitude between the two observations.

Cont'd…

- Sometimes people who place themselves on the extreme positions of a measurement scale at the pre-test stage, may, for a number of reasons, shift towards the mean at the post-test stage. (They might feel that they have been too negative or too positive at the pre-test stage. Therefore, the mere expression of an attitude in response to a questionnaire or interview has caused them to alter their attitude at the time of the post-test. This type of effect is known as the regression effect.

c. Longitudinal study design

- Is used to determine the pattern of change in relation to time.
- Longitudinal studies are also useful when you need to collect factual information on a continuing basis.
- 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.**

Limitations and Strengths…

- 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.

Cont'd…

- The main advantage of a longitudinal study is that it allows the researches to measure the pattern of change and obtain factual information requiring collection on a regular or continuing basis.

2. Reference period

- The reference period refers to the time-frame in which a study is exploring a phenomenon, situation, event or problem.
- Studies within this perspective are thus categorized as:

1. Retrospective;
2. Prospective; and
3. Retrospective-prospective.

A. 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.

Cont'd…

- For example, studies conducted on the following topics are classified as retrospective studies:
- The living conditions of aboriginal people in Ethiopia in the early twentieth century.
- The utilization of land before World war II in Ethiopia.
- A historical analysis of migratory movements in Eastern Europe between 1915 and 1945.

B. The prospective study design

- 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.

Cont'd…

- The following examples are classified as prospective studies:
- To determine, under field conditions, the impact of maternal and child health services on the level of infant mortality.
- To establish the effects of a counseling service on the extent of marital problems.

C. The retrospective-prospective study design

- Retrospective-prospective studies focus on past trends in a phenomenon and study it into the future.
- 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.

Cont'd…

- Some examples are:
- The impact of incentives on the productivity of the employees of an organization.

3. Nature of the investigation

- On the basis of the nature of the investigation, studies can be classified as:
  - Experimental;
  - Non-experimental; and
  - Quasi or semi-experimental.

Experimental Design

- In experimental design, researchers plan to measure the response variable depending on the explanatory variable. The response variable is an outcome measure for predicting or forecasting purposes of a study. It is also called dependent variable or predicted variable
- Any variable that explains the response variable is called explanatory variable. It is also called independent variable or predictor variable

Contd.

- A true experimental design is one in which study participants are randomly assigned to experimental and control groups
- Although randomization is typically described using examples such as rolling dice, flipping a coin, or picking a number out of a hat, most studies now rely on the use of random numbers tables to help them assign their research participants

- A *random numbers table is nothing more than a random list of numbers* displayed or printed in a series of columns and rows

- The most important factor in the experimental design is randomization
- The *randomization check, as its name suggests, is the process of examining* the overall effectiveness of random assignment
- In performing randomization checks, researchers compare study groups or conditions on a number of pretest variables.
- These typically include demographic variables such as age, gender, level of education, and any other variables that are measured or available prior to the intervention

Quasi-experimental Design

- Although the researcher plans to measure the response variable depending on the explanatory variable, there is a lack of randomisation in the quasi-experimental design
- It is a mixed design where random and non-random experiments are employed together

Some Important Concepts Related to Designing a Quantitative Researches

1. Variable and concept

- An image, perception or concept that is capable of measurement-hence capable of taking on different values-is called a variable.
- In other words, a concept that can be measured is called a variable.
- A variable is a property that takes on different values.

Cont'd…

The difference between a concept and a variable

- Concepts are mental images or perceptions and therefore their meanings vary markedly form individual to individual, whereas variables are measurable.
- Measurability is the main difference between a concept and a variable.
- A concept cannot be measured whereas a variable can be subjected to measurement by crude/refined, or subjective/ objective units of measurement.

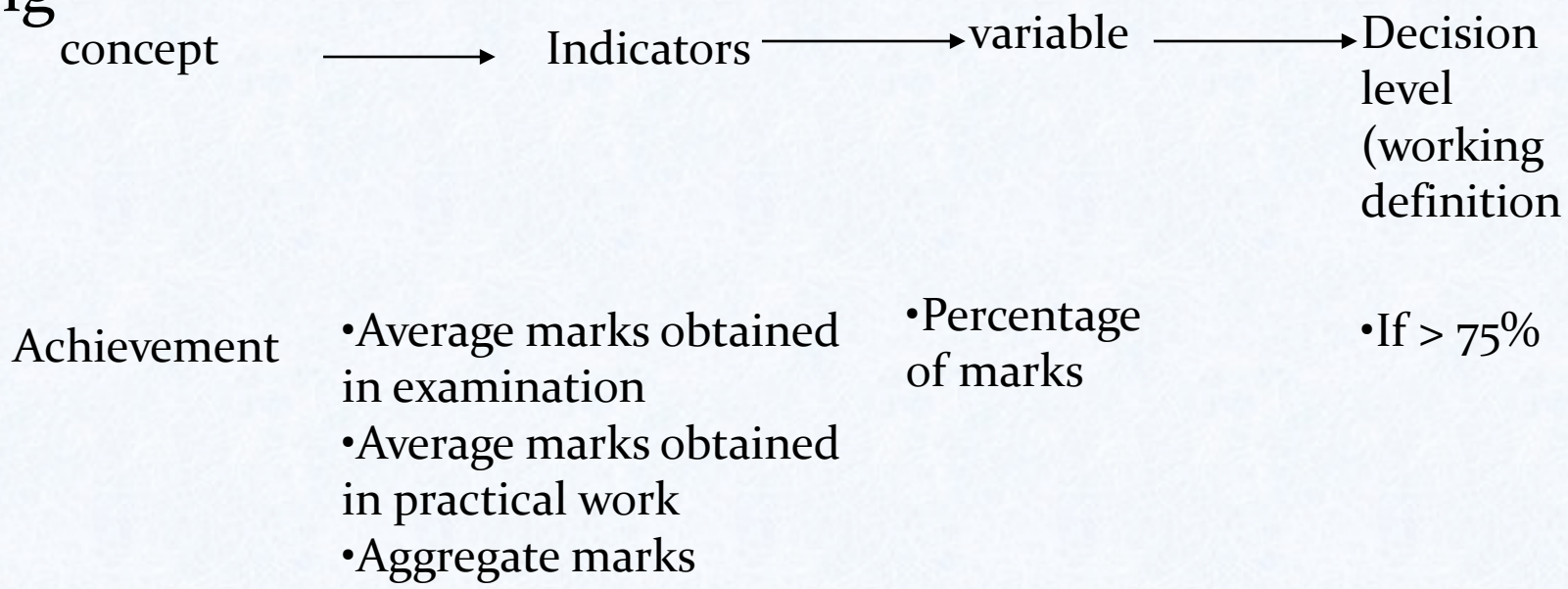
Cont'd…

- Concepts are subjective impressions-their understanding may differ form person to person.
- It is ,therefore, important for the concepts to be converted into variables as they can be subjected to measurement even though, the degree of precision with which they can be measured varies from scale to scale.

Cont'd…

- If you are using a concept in your study, you need to consider its opetationalization, that is, how it will be measured.
- To operationalize a concept you first need to go thorough the process of identifying indicators.
- Indicators are a set of criteria reflective of the concept-which can then be converted into variables.

Fig


concept
Indicators
variable
Decision level (working definition
Achievement
•Average marks obtained in examination
•Average marks obtained in practical work
•Aggregate marks
•Percentage of marks
•If > 75%

Types of variable

- A variable can be classified in a number of ways.
- The classification developed here results form looking at variables in two different ways:

a) The causal relationship
b) The unit of measurement

a. From the view point of causation

- In studies that attempt to investigate a causal relationship or association, three sets of variables may operate:
  - **Change variables**, which are responsible for bringing a bout change in a phenomenon;
  - **Outcome variables**, which are the effects of a change variable; and
  - Variables which **affect the link** between cause and effect variables.

Cont'd…

- In research terminology;
- Change variables are called **independent variables**
- Outcome/effect variables are called **dependent variables**
- The unmeasured variables affecting the cause and effect relationship are called **extraneous variables**

Cont'd…

- **Independent variable** – the cause supposed to be responsible for bringing about change(s) in a phenomenon or situation.
- **Dependent variable** – The outcome of the change(s) brought about by changes in an independent variable.

Cont'd..

- **Extraneous variable-** several other factors operating in real-life situation may affect changes attributed to independent variables. These factors, not measured in the study, may increase or decrease the magnitude or strength of the relationship between independent and dependent variables.

- If one variable depends upon or is a consequence of the other variable, it is termed as a dependent variable, and the variable that is antecedent to the dependent variable is termed as an independent variable.
- For instance, if we say that height depends upon age, then height is a dependent variable and age is an independent variable.
- Further, if in addition to being dependent upon age, height also depends upon the individual's sex, then height is a dependent variable and age and sex are independent variables.

- Independent variables that are not related to the purpose of the study, but may affect the dependent variable are termed as extraneous variables.
- Suppose the researcher wants to test the hypothesis that there is a relationship between children's gains in social studies achievement and their self-concepts. In

- In this case self-concept is an independent variable and social studies achievement is a dependent variable. Intelligence may as well affect the social studies achievement, but since it is not related to the purpose of the study undertaken by the researcher, it will be termed as an extraneous variable.
- Whatever effect is noticed on dependent variable as a result of extraneous variable(s) is technically described as an 'experimental error'.
- A study must always be so designed that *the effect upon the dependent variable is attributed entirely to the independent variable(s), and not to some extraneous variable or variables.*

- When the dependent variable is not free from the influence of extraneous variable(s), the relationship between the dependent and independent variables is said to be confounded by an extraneous variable(s).

b. From the viewpoint of the measurement

- From the viewpoint of the unit of measurement, there are two ways of categorizing variables:
- Whether the unit of measurement is **categorical** (as in nominal and ordinal scales) or **continuous** in nature (as in interval and ratio scales); and
- Whether it is qualitative (as in nominal and ordinal scales) or quantitative in nature (as in interval and ratio scales).

Cont'd…

- The variables thus classified are called categorical or continuous, and qualitative or quantitative.
- On the whole there is very little difference between categorical and qualitative, and between continuous and quantitative variables.

Cont'd…

- **Categorical variables** can be of three types:
  - Constant;
  - Dichotomous; and
  - Polytomous.
- When a variable can have only one value or category, e.g., taxi, tree, water, it is known as **a constant.**

Cont'd…

- When a variable can have only two categories as in yes/no; good/bad; rich/poor, it is known as a **dichotomous** variable.
- When a variable can be divided in to more than two categories, e.g., religion (Christian, Muslim, Hindu); Political parties (EPDRF, EDP, Coalition); attitudes (strongly favourable, favourable, uncertain, unfavourable, strongly unfavourable), it is called a **polytomous** variable.

Cont'd…

- **Continuous variables**, on the other hand, have continuity in their measurement. For example, age, income, an attitude score. They can take on any value on the scale on which they are measured. Age can be measured in years, months and days. Similarly, income can be measured in Birr and cents.

2.Measurement and Scaling Techniques

- Measurement is central to any scientific inquiry. The greater the refinement in the unit of measurement of a variable, the greater the confidence, other things being equal, one can place in the findings.
- Scaling is how we get numbers that can be meaningfully assigned to objects.

Types of Scales

- The scaling procedures may be broadly classified on one or more of the following bases:
- **The type of data they generate, and**
- **The means of generating data**

- **Classification based on the type of data they generate**
- There are **four primary** scales of measurement: ***nominal, ordinal, interval, and ratio***.
- The four primary types of scales may be described by the Acronym ***FOUR*****.**
- ***F***igurative: Nominal
- ***O*** rdinal scale
- ***U*** unconstructed zero point: interval scale
- **R** atio scale

The four scales briefly discussed here in under.

Nominal Scales

- Is defined as a scale whose numbers serve only as labels or tags for identifying and classifying objects with a strict one-to-one correspondence between the numbers and the objects.
- Each number is assigned to only one object and each object has only one number assigned to it.

- Common examples include social security numbers and numbers assigned to football players.
- When used for classifying purposes, the nominally scaled numbers serve as labels for classes or categories.
- For example, you might classify the control group 1 and the experimental group as group 2.

- The objects in each class are viewed as equivalent with respect to the characteristics represented by the nominal number.
- All objects in the same class have the same number and no two classes have the same number.
- The numbers in a nominal scale do not reflect the amount of the characteristics possessed by the objects.
- For example, your identity number does not imply that the you are in some way superior to those with lower identity number or vice versa.

Cont'd…

Sample Nominal –Scaled Questions

- Please indicate your gender. 1. Male 2. Female
- Check all the destinations you would consider visiting.
  - _____ 1. Semein Mountains
  - _____2. Lalibela
  - _____3. Tis Abay
  - _____ 4. Axum

Ordinal Scales

- Is defined as a ranking scale in which numbers are assigned to objects to indicate the relative extent to which some characteristics is possessed.
- Thus, it is possible to determine whether an object has more or less of characteristics than some other object.

Cont'd…

- The object ranked first has more of the characteristics as compared to the object ranked second, but whether the object ranked second is a close second or a poor second is not known.
- Common examples of ordinal scale include quality rankings, ranking of teams in a tournament, socioeconomic class, and occupational status.
- In business research, ordinal scale is used to measure relative attitudes, opinions, perceptions, and preferences.

Sample Ordinal –Scaled Questions

Please rank each destination in terms of your preference to visit.

Place a "1" by your first choice, a "2" by your second choice, and so on.

- _____ Semein Mountains
- _____ Tis Abay
- _____Gondar(Fasilides)

Interval Scales

- Is defined as a scale in which the numbers are used to rate objects such that numerically equal distances on the scale represent equal distances in the characteristics being measured.
- The difference between any two adjacent scale values is identical to the difference between any other two adjacent values of an interval scale.

Cont'd…

- There is a constant or equal interval between scale values.
- The difference between 1 and 2 is the same as the difference between 2 and 3, which is a temperature scale.
- In business research, attitudinal data obtained from ratings scales are often treated as interval data.
- In the interval scale, the location of the zero point is not fixed.
- Both the zero point and the units of measurement are arbitrary.

Cont'd…

- Therefore, two interval scales that rate objects A, B, C, and D as 1, 2, 3, and 4, or as 22, 24, 26, and 28, are equivalent.
- Because the zero point is not fixed, it is not meaningful to take ratios of scale values.
- As can be seen, the ratio of D to B values changes from 2: 1 to become 7:6 when the scale is transformed.

Cont'd…

- Yet ratios of differences between scale values are permissible.
- The ratio of the difference between D and B to the difference between C and B is 2: 1 in both the scales.

Sample Interval –Scaled Questions

- Please rate each destinations in terms of its overall attractiveness.

	Very poor				***Very good***
Gondar	1	2	3	4	5
Se. Mountains	1	2	3	4	5
Axum	1	2	3	4	5

Cont'd…

- Please rate each brand in terms of its overall performance.

	Very poor				***Very good***
Panasonic	1	2	3	4	5
Philips	1	2	3	4	5
Sony	1	2	3	4	5

Cont'd…

- Indicate your degree of agreement with the following statements by encircling the appropriate number.

S/N	Statement	Strongly Disagree				Strongly Agree
		1	2	3	4	5
1	I always look for bargains	1	2	3	4	5
2	I enjoy being outdoors	1	2	3	4	5
3	I love to cook.	1	2	3	4	5

Ratio Scale

- Is defined as the highest scale.
- It allows the researcher to identify or classify objects, rank order the objects, and compare intervals or differences.
- It is also meaningful to compute ratios of scale values.
- Not only is the difference between 2 and 5 the same as the difference between 14 and 17, but also 14 is seven times as large as two in an absolute sense.

- Common examples of ratio scales include height, weight, and money.
- Number Tourists/customers, sales, costs, and market share are variables measured on a ratio scale.
- All statistical techniques can be applied to ratio data.
- These include specialized statistics such as geometric Mean, harmonic mean, and coefficient of variation.

Sample Ratio –Scaled Questions

- **Please indicate your age. _____years.**
- Approximately how many times in the last week have you purchased anything over birr 5 in value at Red Fox?
- 0 1 2 3 4 5 more (specify_____)

- ***Classification of scales on the basis of how data are generated:***
- *Scales can be classified as a* ***Comparative*** *vs* ***Non-comparative****.*
- ***Comparative scale*** is a scaling techniques in which there is direct comparison of stimulus objects with one another.
- For example, respondents might be asked whether they prefer Ijoo Hotel to Desalegn Hotel.
- Comparative scale data must be interpreted in relative terms and have only **ordinal or rank** order properties.

- The major benefit of comparative scaling is that small differences between stimulus objects can be detected.
- As they compare the stimulus objects, respondents are forced to choose between them.
- The major disadvantages of comparative scaling include the ordinal nature of the data and the inability to generalize beyond the stimulus objects scaled.
- For example to compare Ijoo Hotel to Desalegn and Adugna, the researcher would have to do a new study.

- ***Non-Comparative Scales:*** The previous study comparing Ijoo and Desalegn would not be of much use.
- These disadvantages are substantially overcome by non comparative scaling techniques.

- Non comparative scale is defined scaling technique in which each stimulus object is scaled independently of the other objects in the stimulus set.
- The resulting data are generally assumed to be **interval or ratio** scaled.

- For example, respondents may be asked to evaluate Ijoo Hotel on a 1-to- 6 preference scale (1=not at all preferred, 6 =greatly preferred).
- Similar evaluations would be obtained for Desalen and Adugna.
- Non - comparative scales can be further classified as likert, or semantic differential scales.
- Non - comparative scaling is the most widely used technique in Business Researches.

Classification

Comparative Scales

- **Paired Comparison**
- **Rank Order**
- **Constant Sum Scale**

Non comparative Scales

- **Likert Scale, and**
- **Semantic differential Scale.**

Comparative Scaling Techniques

Comparative scales can be divided into the following:

a. Paired Comparison

- ***Paired Comparison*** is defined as comparative scaling techniques in which a respondent is presented with two objects at a time and asked to select one object in the pair according to some criterion. The data obtained are ordinal in nature.
- Paired comparison scales are frequently used when the stimulus objects are physical products.

Cont'd…

- Comparative comparison scaling is the most widely used comparative scaling technique.
- The most common method of taste testing is paired comparison.
- The consumer is asked to sample two different products and select the one with the most appealing taste.
- *Transitivity of preference:* is defined as an assumption made in order to convert paired comparison data to rank order data. It implies that if brand A is preferred to brand B and brand B is preferred to brand C, then brand A is preferred to brand C.

b. Rank Order

- Is defined as a comparative scaling technique in which respondents are presented with several objects simultaneously and asked to order or rank them according to some criterion.
- For example, respondents may be asked to rank brands of toothpaste according to overall preference.
- These rankings are typically obtained by asking the respondents to assign a rank of 1 to the most preferred brand, 2 to the second most preferred brand, and so on, until a rank of n is assigned to the least preferred brand.

Cont'd…

- Rank order scaling is commonly used to measure preference for brands as well as attributes.

Advantages

- It takes less time and process –it eliminates intransitive responses.
- If there are n stimulus objects, only (n-1) scaling decisions need be made in rank order scaling.
- However, in paired comparison scaling, [n (n-1)/2] decisions would be required.
- Most respondents easily understand the instructions for ranking.

Cont'd…

Disadvantages

- This technique produces only ordinal data.

Preference for Destinations Using Rank and Order Scaling

- Rank the various tourism destinations in Ethiopia in order of preference. Begin by picking out the one destination that you like most and assign it a number 1.

Cont'd…

- Then find the second most preferred and assign it a number 2. Continue this procedure until you have ranked all the destinations in order of preference. The least preferred one should be assigned a rank of 10.
- No two destinations should receive the same rank number.
- The criterion of preference is entirely up to you.

There is no right or wrong answers. Just try to be consistent.

S/N	Site	Rank order
1	***Gondar***	
2	Axum	
3	Lalibela	
4	Semein	
5	Sof Oumer	
6	Konso	
7	Tis Abay	
8	Lake Tana monasteries	
9	Rift valley Lakes	
10	Ertale	

c. Constant Sum Scaling

- Is defined as a comparative scaling techniques in which respondents are required to allocate a constant sum of units such as points , dollars, …among a set of stimulus objects with respect to some criterion.
- Respondents may be asked to allocate 100 points to attributes tourist attractions in a way that reflects the importance they attach to each attribute.

Cont'd…

- If an attribute is unimportant, the respondent assigns it zero points.
- If an attribute is twice as important as some other attribute, it receives twice as many points. The sum of all the points is 100.
- Hence, the name of the scale.
- The attributes are scaled by counting the points assigned to each one by all the respondents and dividing by the number of respondents.

Importance Of Toilet Soap Attributes Using A Constant Sum Scale.

Instructions

- Below are five attributes of Tourist Sites". Please allocate 100 points among the attributes so that your allocations reflect the relative importance you attach to each other. The more points an attribute receives, the more important that attribute is. If an attribute is not at all important, assign it zero points. If an attribute is twice as important as some other attributes, it should receive twice as many points.

Cont'd…

S/N	Average Responses of Three Segments			
	Attributes	***Segment I***	***Segment II***	***Segment III***
1	Physical Attractive	70	60	65
2	Tour Operators Quality	10	15	20
3	Infrastructure	15	15	10
4	Price	5	10	5
Sum……		100	100	100

Cont'd…

Analysis

- Segment I attaches overwhelming importance to price.
- Segment II considers basic cleaning power to be of a prime importance.
- Segment III values lather, fragrance, moisturizing, and cleaning power.
- Such information can not be obtained from rank order data unless they are transformed into interval data.
- Note that the constant sum also has an absolute zero- 10 points are twice as many as 5 points, and the difference between 5 and 2 points is the same as the difference between 57 and 54 points.

Cont'd…

- Note that the constant sum also has an absolute zero.
- For this reason, constant sum scale data are sometimes treated as metric/ratio.
- Although this may be appropriate in the limited context of this stimuli scaled, these results are not generelizable to other stimuli not included in the study.
- Hence strictly speaking, the constant sum should be considered an ordinal scale because of its comparative nature and the resulting lack of generalablity.

Cont'd…

Advantages

- It allows for fine discrimination among stimulus objects without requiring too much time.

Disadvantages

- Respondents may allocate more or fewer units than those specified.
- For example a respondent may allocate 108 or 94 points. The researcher must modify such data in some way or eliminate this respondent from analysis.
- Rounding error if too few units are used.
- The use of a large number of units may cause confusion and fatigue to the respondents.

Non Comparatives Scaling Techniques

- is defined as a scaling technique in which each stimulus object is scaled independently of the other objects in the stimulus set.
- The most commonly used non comparative rating scales are the **likert, and semantic differential scales**.

a. Likert Scale (LS)

- LS is a measurement scale with mostly five response categories ranging from " strongly disagree" to " strongly agree" , which requires the respondents to indicate a degree of agreement or disagreement with each of a series of statements related to the stimulus objects.
- A likert scale can be used for evaluating attitudes.

Project Research Using Likert Scale

Instructions

Listed below are different opinions about CSR of EFPBI. Please indicate how strongly you agree or disagree with each by using the following scale:

1= strongly disagree
2= Disagree
3= neither agree nor disagree
4= agree
5= strongly agree

S/N	Attributes	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	EFPBI provide generous financial donations to the community	1	2	3	4	5
2	EFPBI are known for innovative giving to the community like for example giving for entrepreneurial development	1	2	3	4	5
3	EFPBI provide support for education and job training programs	1	2	3	4	5
4	EFPBI directly involve in community projects, infrastructural developments and other social affairs	1	2	3	4	5
5	EFPBI are engaged in community volunteer programs	1	2	3	4	5

Analysis

- To conduct the analysis, each statement is assigned a numerical score, ranging either from -2 to +2 or 1 to 5 .
- The analysis can be conducted on an **item-by-item basis (profile analysis), or a total (summated)** score can be calculated for each respondent by summing across items.
- LS is also called the summated scale.
- Note that for a negative statement, an agreement reflects an unfavorable response, whereas for a positive statement, agreement represents a favorable response.

- Accordingly, a “strongly agree” response to a favorable statement and a “strongly disagree” response to an unfavorable statement would both receive scores of 5.

Advantages

- It is easy to construct and administer.
- Respondents readily understand how to use the scale, making it suitable for mail, telephone, or personal interviews.

Disadvantages

- It takes longer to complete than other itemized rating scales because respondents have to read each statement.

b. Semantic Differential (SD)

- SD is a 7 –point rating scale with endpoints associated with bipolar labels that have semantic meaning.
- In a typical application, respondents rate objects on a number of itemized, 7-point scales bounded at each end by one of two bipolar adjectives, such as “cold” and “warm.”

Project Research on Semantic Differential Scale

Instructions

- This part of the study measures what "X" mean to you by having you judge them on a series of descriptive scales bounded at each end by one of two bipolar adjectives.
- Please Mark (X) the blank that best indicates how accurately one or the other adjectives describes what the "X" means to you. Please be sure to mark every scale; do not omit any scale.

Cont'd…

Form
X is:
Powerful ____/_____/_____ /_____/__X___/_____/_____/ *Weak*
Unreliable ____/_____/_____ /_____/__X___/_____/_____/*Reliable*
Modern ____/_____/_____ /_____/_____/_____/___X____/ *Old fashioned*
Cold ____/_____/_____ /_____/_____/_____X____/_____/ *Warm*
Careful ____/__X__/_____ /_____/__ __/_____/_____/ *Careless*

A Semantic Differential Scale For Measuring Self-concepts, Person Concepts, And Product Concepts.

Rugged /___/____/____/____/_____/_____/_____/ Delicate
Excitable /___/____/____/____/_____/_____/_____/ Calm
Uncomfortable /___/____/____/____/_____/_____/_____/ comfortable
Dominating /___/____/____/____/_____/_____/_____/ submissive
Thrifty /___/____/____/____/_____/_____/_____/ Indulgent
Pleasant /___/____/____/____/_____/_____/_____/ unpleasant
Contemporary /___/____/____/____/_____/_____/_____/Non contemporary

- Organized /___/____/____/____/_____/_____/_____/ Unorganized
- Rational /___/____/____/____/_____/_____/_____/ Emotional
- Youthful /___/____/____/____/_____/_____/_____/ Mature
- Formal /___/____/____/____/_____/_____/_____/Informal
- Orthodox /___/____/____/____/_____/_____/_____/ liberal
- Complex /___/____/____/____/_____/_____/_____/ simple
- Colorless /___/____/____/____/_____/_____/_____/ colorful
- Modest /___/____/____/____/_____/_____/_____/ Vain

Analysis

- Individual items on a semantic differential scale may be scored on a *-3 to + 3 or a 1-to-7 scale*. The resulting data are commonly analyzed through profile analysis.
- In profile analysis, means or median values on each rating scale are calculated and compared by plotting or statistical analysis.
- This helps determine the overall differences and similarities among the objects.
- To assess differences across segments of respondents, the researcher can compare mean responses of different segments.

- **Although the mean is most often used as a summary statistics, there is some controversy as to whether the data obtained should be treated as an interval scale.**
- On the other hand, in cases when the researcher requires an overall comparison of objects, such as to determine Product preference, the individual item scores are summed to arrive at a total score.

- Its versatility makes the semantic differential a popular rating scale in business research.
- It has been widely used in comparing brand, product, and images.

Some Important Issues while constructing measurement scales

1	**Number of categories**	**Although there is no single optimal number, traditional guidelines suggest that there should be between five and nine categories.**
2	balanced versus unbalanced	In general, the scale should be balanced to obtain objective data.
3	odd or even number categories	If a neutral or indifferent scale response is possible from at least some of the respondents, an odd number of categories should be used.
4	forced versus nonforced	In situations where the respondents are expected to have opinion, the accuracy of data may be improved by a nonforced scale.
5	verbal description	An argument can be made for labeling all or many scale categories. The category descriptions should be located as close to the response categories as possible.
6	Physical form	A number of options should be tried and the best one selected.

a. The Number of Scales Categories to Use

- Two conflicting considerations are involved in deciding the number of scales categories.
- The greater the number of scale categories, the finer the discrimination among stimulus objects
- On the other hand, most respondent can not handle more than a few categories.
- Traditional guidelines suggest that appropriate number of categories should be seven plus or minus two: between five and nine.

Cont'd…

- There is no single optimal number of categories. Several factors should be taken into account in deciding on the number of categories.
- If the respondents are interested in the scaling task and are knowledgeable about the objects, a larger number of categories may be employed.
- On the other hand, if the respondents are not very knowledgeable or involved with the task, fewer categories should be used.
- Likewise, the nature of the objects is also relevant. Some objects do not lend themselves to fine discrimination, so a small number of categories is sufficient.

Cont'd…

- Another important factor is the mode of data collection.
- If telephone interviews are involved, many categories may confuse the respondents.
- Likewise, space limitations may restrict the number of categories in mail questionnaires.
- How the data are to be analyzed and used should also influence the number of categories.
- In situations where several scale items are added together to produce a single score for each respondent, five categories are sufficient.
- The same is true if the researcher wishes to make broad generalizations or group comparisons.

b. Balanced Versus Unbalanced Scale.

- Balanced scale is a scale with an equal number of favorable and unfavorable categories.
- In general the scale should be balanced in order to obtain objective data.

- However, if the distribution of responses is likely to be skewed, either positively or negatively, an unbalanced scale with more categories in the direction of skewness may be appropriate.
- If an unbalanced scale is used, the nature and degree of unbalance in the scale should be taken into account in data analysis.

c. Odd or Even Number Categories

- With an odd number of categories, the middle scale position is generally designated as neutral or impartial.
- The presence, position, and labeling of a neutral category can have a significant influence on the response.
- The decision to use an odd or even number of categories depends on whether some of the respondents may be neutral on the response being measured.

- If, on the other hand , the researcher wants to force a response or believes that no neutral or indifferent responses exists , a rating scale with an even number of categories no neutral or indifferent response exists , a rating scale with an even number of categories should be used.

d. Forced Versus Non Forced Choice

- A forced scale is a rating scale that forces the respondents to express an opinion because "no opinion" or "no knowledge "option is not produced.
- In such a case, respondents without an opinion may mark the middle scale position.
- If a sufficient proportion of the respondents do not have opinions on the topic , marking the middle position will distort measures of central tendency and variance.

- In institutions where the respondents are expected to have no opinions, as opposed to simply being reluctant to disclose it, the accuracy of data may be improved by a non-forced scale that includes a "***no opinion***" category.

e. The Nature and Degree of the Verbal Description

- The nature and degree of verbal description associated with scale categories varies considerably and can have an effect on the responses
- Scale categories may have verbal, numerical, or even pictorial descriptions.
- Furthermore, the researcher must decide whether to label every scale category, some scale categories, or only extreme scale categories.

- Surprisingly, providing a verbal description for each category may not improve the accuracy or reliability of the data.
- Yet an arrangement can be made for labeling all or many scale categories to reduce scale ambiguity.
- The category descriptions should be located as close to the response categories as possible.
- The strength of adjectives used to anchor the scale may influence the distribution of the responses.

- With strong anchors (1= completely disagree, 7 = completely agree), respondents are less likely to use the extreme scale categories.
- This results in less variable and more peaked response distributions.
- Weak anchors (1= generally disagree, 7= generally agree), in contrast, produce uniform or flat distributions.

f. The Physical Form of the Scale

- A number of options are available with respect to scale form or configuration.
- Scales can be presented vertically or horizontally.
- Categories can be expressed by boxes , discrete lines, or units on a continuum and may or may not have numbers assigned to them
- If numerical values are used, they may be positive, negative, or both.

Cont'd…

- ***A variety of scale configurations may be employed to measure the gentleness of cheer detergent. Some examples include:***
  Cheer detergent is :

Very harsh __ ____ ____ _____ _____ ___ ____ **Very gentle**
1 2 3 4 5 6 7

Very harsh 1 2 3 4 5 6 7 Very gentle

Scale Evaluation

- A scale should be evaluated for accuracy and applicability.
- Scale evaluation involves an assessment of reliability, and validity.

- ***Reliability:*** refers to the extent to which a scale produces consistent results if repeated measurements are made on the characteristics.
- ***Test-re-test reliability :*** is an approach for assessing reliability in which respondents are administered identical sets of scale items at two different items under as nearly equivalent conditions as possible.
- ***Alternative –Forms of Reliability***: is an approach for assessing reliability that requires two equivalent forms of the scale to be considered and then the same respondents are measured at two different times.

- ***Internal consistency reliability:*** is an approach for assessing the internal consistency of the set of items when several items are summated in order to form a total scores are correlated.
- **Split-half-reliability**: is a form of internal consistency reliability in which the items constituting the scale are divided into two halves and the resulting half scores are correlated.
- ***Coefficient alpha / Cronbach's alpha*** is a measure of internal consistency reliability that is the average of all possible split-half coefficients resulting from different splitting the scale items.
- ***This coefficient*** varies from 0 to 1, and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability.

Validity

- ***Validity:*** is the extent to which differences in observed scale scores reflect true differences among objects on the characteristics being measured, rather than systematic or random errors.
- ***Content validity***: a type of validity, sometimes called face validity that consists of a subjective but systematic evaluation of the representativeness of the content of a scale for the measuring task at hand.
- ***Criterion validity***: is a type of validity that examines whether the measurement scale performs as expected in relation to other variables selected as meaningful criteria.

- ***Construct validity***: is a type of validity that addresses the question of what construct or characteristics the scale is measuring. An attempt is made to answer theoretical questions of why a scale works and what deductions can be made concerning the theory underlying the scale.
- ***Convergent validity***: is the extent to which the scale correlates positively with other measures of the same construct.

- ***Discriminant validity***: is the extent to which a measure does not correlate with other constructs from which it is supposed to differ.

Types of Study Designs in Qualitative Studies

- **Ethnographies**, in which the researcher studies an intact cultural group in a natural setting over a prolonged period of time by collecting, primarily, observational data.
- The research process is flexible and typically evolves contextually in response to the lived realties encountered in the field setting.

- **Grounded theory,** in which the researcher attempts to derive a general, abstract theory of a process, action, or interaction grounded in the views of participants in a study.
- This process involves using multiple stages of data collection and the refinement and interrelationship of categories of information.
- Two primary characteristics of this design are the constant comparison of data with emerging categories and theoretical sampling of different groups to maximize the similarities and the differences of information

- **Case studies**, in which the researcher explores in depth a program, and event, and activity, a process, or one or more individuals.
- The case (s) are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time.

- **Phenomenological research**, in which the researcher identifies the "essence" of human experiences concerning a phenomenon, as described by participants in a study.
- Understanding the "lived experiences" marks phenomenology as a philosophy as well as a method, and the procedure involves studying a small number of subjects through extensive and prolonged engagement to develop patterns and relationships of meaning.
- In this process, the researcher "brackets“ his or her own experiences in order to understand those of the participants in the study.

- **Narrative research**, a form of inquiry in which the researcher studies the lives of individuals and asks one or more individuals to provide stories about their lives.
- This information is then retold or restoried by the researcher into a narrative chronology.
- In the end, the narrative combines views form the participant's life with those of the researcher's life in a collaborative narrative.

Study Designs in Mixed Method Researches

- Mixed method approach extends the pragmatic knowledge claims, the strategies of inquiry, and the use of multiple methods.
- Mixed method research extends the discussion about a research problem that incorporates the need both to explore and to explain.

- The are four criteria to classify study designs in a mixed methods researches :

1. What is the implementations sequence of the quantitative and qualitative data collection in the proposed study?
2. What priority will be given to the quantitative and qualitative data collection and analysis?
3. At what stage in the research project will the quantitative and qualitative data and findings be integrated?
4. Will an overall theoretical perspective (e.g., gender, race/ethnicity, lifestyle, class) be used in the study?

1. Implementation

- Implementation means either that the researchers collect both the quantitative and qualitative data:
  - Sequentially (in phases) or
  - Concurrently (at the same time).

- Sequential:
- When the data are collected in phases, either the qualitative or the quantitative data can come first.
- The decision of sequencing depends on the initial intent of the researcher.
- When qualitative data are collected first the intent is:
- To explore the topic with participants at sites, first.
- Then, in the second phase, to collect data from a large number of people (typically representative).

- Concurrent:
- When data are collected concurrently, both quantitative and qualitative data are gathered at the same time in the project and the implementation is simultaneous.

2. Priority

- A second factor that goes into the choice of a strategy is whether greater priority or weight is given to the quantitative or the qualitative approach, especially the use of quantitative data and analysis.
- The priority might be:

✓ Equal, or

✓ Skewed toward either qualitative or quantitative data.

- A priority for one type of data or the other depends on:
  - The interests of the researcher,
  - The audience for the study (e.g., Faculty committee, professional association), and
  - What the investigator seeks to emphasize in the study.

- In practical terms, priority occurs in a mixed methods study through such strategies as:
- Whether quantitative or qualitative information is emphasized first in the study,
- The extent of treatment of one type of data or the other, and
- The use of a theory as an inductive or deductive framework for the study.

- Previously, terms such as “dominant” and “less-dominant” were used to express priority.
- Having a major form of data collection and analysis and a minor form is well suited for studies as well.

3. Integration

- Integration means that the researcher “mixes” the data.
- Integration of the two types of data might occur at several stages in the process of research:
  - The data collection,
  - The data analysis,
  - Interpretation, or
  - Some combination of places.

- For example, in data collection, the “mixing” might involve combining open-ended questions on a survey with closed-ended questions on the survey.
- Mixing at the stage of data analysis and interpretation might involve transforming qualitative themes or codes into quantitative numbers and comparing that information with quantitative results in an “interpretation” section of a study.

- The place in the process for integration seems related to whether:
  - ✓ Phases (a sequence) or
  - ✓ A single phase (concurrent) of data collection occurs.

4. A Theoretical Perspective

- A final factor to consider is whether a larger, theoretical perspective guides the entire design.
- This perspective may be one from the social sciences or from an advocacy/participatory lens (e.g., gender, race, class).
- Although all designs have implicit theories, mixed methods researchers can make the theory explicit as a guiding framework for the study.
- This framework would operate regardless of the implementation, priority, and integrative features of the strategy of inquiry.

Decision choices for Determining a Mixed Methods Strategy of Inquiry

Implementation	Priority	Integration	Theoretical Perspective
No Sequence Concurrent	Equal	At Data collection	Explicit
Sequential-Qualitative first	Qualitative	At Data Analysis	
Sequential-Quantitative first	Quantitative	At Data Interpretation	Implicit
		With Some Combination	

Alternative Designs /strategies and visual models

- Mixed methods researchers can make decisions about these four factors to select a particular research strategy.
- There are six major strategies for the choices of inquirers in a research proposal.
- A proposal would contain a description of the strategy and a visual model of it, as well as including basic procedures that the investigator will use in implementing the strategy.
- Each strategy will be briefly described in the Table below:

Mixed Methods

Type	Timing	Weighting	Mixing	Notation
Triangulation	Concurrent	Equal	Merge data at analysis & interpretation	QUAN + QUAL
Embedded	Concurrent or sequential	Unequal	Embed one dataset within another	QUAN (qual) or QUAL (quan)
Explanatory	Sequential, quan usually first	Usually QUAN	Connect the two datasets	QUAN → qual
Exploratory	Sequential, qual usually first	Usually QUAL	Connect the two datasets	QUAL → quan

- The notation in these figures represent
- A “+” indicates a simultaneous or concurrent form of data collection.
- A “ → ” indicates a sequential form of data collection.
- Capitalization indicates an emphasis or priority on the quantitative or qualitative data and analysis in the study.
- “Quan” and “Qual” stand for quantitative and qualitative, respectively, and they use the same number of letters to indicate equality between the forms of data.

Sequential Explanatory strategy

- The sequential explanatory strategy is the most straightforward of the six major mixed methods approaches.
- It is characterize by the collection and analysis of quantitative data followed by the collection and analysis of qualitative data.
- The priority typically is given to the quantitative data, and the two methods are integrated during the interpretation phase of the study.

- The purpose of the sequential explanatory design typically is to use qualitative results to assist in explaining and interpreting the findings of a primarily quantitative study.
- It can be especially useful when unexpected results arise from a quantitative study.
- In this case, the qualitative data collection that follows can be used to examine these surprising results in more detail.

- The straightforward nature of this design is one of its main strengths.
- It is easy to implement because the steps fall into clear, separate stages.
- In addition, this design feature makes it easy to describe and to report.
- The main weakness of this design is the length of time involved in data collection, with the two separate phases.
- This is especially a drawback if the two phases are given equal priority.

Sequential exploratory strategy

- The sequential exploratory strategy ahs many features similar to the sequential explanatory strategy.
- It is conducted in two phases, with the priority generally given to the first phase, and it may or may not be implemented within a prescribed theoretical perspective.
- In contrast to the sequential explanatory approach, this model is characterized by an initial phase of qualitative data collocation and analysis.
- Therefore, the priority is given to the qualitative aspect of the study.
- The finding s of these two phases are then integrated during the interpretation phase.

- At the most basic level, the purpose of this strategy is to use quantitative data and results to assist in the interpretation of qualitative findings.
- Unlike the sequential explanatory approach, which is better suited to explaining and interpreting relationships, the primary focus of this model is to explore a phenomenon.

- This design is appropriate to use when testing elements of an emergent theory resulting from the qualitative phase and that it can also be used to generalize qualitative findings to different samples.
- It is also important design to determine the distribution of a phenomenon within a chosen population.
- Finally, the sequential exploratory strategy is often discussed as the model used when a researcher develops and tests an instrument.

- The sequential exploratory strategy has many of the same advantages as the sequential exploratory strategy has many of the same advantages as the sequential explanatory model.
- Its two-phase approach makes it easy to implement and straightforward to describe and report.
- It is useful to a researcher who wants to explore a phenomenon but also wants to expand on the qualitative findings.
- This model is especially advantageous when a researcher is building a new instrument.

- In addition, this model could make a largely qualitative study more palatable to a quantitative adviser, committee, or research community that may be unfamiliar with the naturalistic tradition.
- As with the sequential explanatory approach, the sequential exploratory model requires a substantial length of time to complete both data collection phases, which can be a drawback for some research situations.
- In addition, the researcher may find it difficult to build from the qualitative analysis to the subsequent quantitative data collection.

Sequential Transformative Strategy

- As did the previously described sequential model, the transformative sequential strategy has two distinct data collection phases, one following the other.
- However, in this design either method may be used first, and the priority can be given to either the quantitative or the qualitative phase or even to both if sufficient resources are available.
- In addition, the results of the two phases are integrated during the interpretation phase.

- Unlike the sequential exploratory and explanatory and explanatory approaches, the sequential transformative model has a theoretical perspective to guide the study.
- The aim of this theoretical perspective whether it be a conceptual framework, a specific ideology, or advocacy, is more important in guiding the study than the use of methods alone.

- The purpose of a sequential transformative strategy is to employ the methods that will best serve the theoretical perspective of the researcher.
- By using to two phases, a sequential transformative researcher may be able to give voice to diverse perspectives, to better advocate for participants, or to better understand a phenomenon or process that is changing as a result of being studied.

- The sequential transformative model shares the methodological strengths and weaknesses of the other two sequential mixed methods approaches.
- The use of distinct phases facilitates its implementation, description, and sharing of results, although it also requires the time to complete two data collection phases.

- More important, this design places mixed methods research within a transformative framework.
- Therefore, this strategy may be more appealing and acceptable to those researchers already using a transformative framework within one distinct methodology, such as qualitative research.
- Unfortunately, because little has been written to date on this approach, one weakness is that there is little guidance on how to use the transformative vision to guide the methods.
- Likewise, it may be unclear how to move between the analysis of the first phase into the data collection of the second phase.

Concurrent Triangulation strategy

- The concurrent triangulation approach is probably the most familiar of the six major mixed methods models.
- It is selected as the model when a research uses two different methods in an attempt to confirm, cross-validate, or corroborate findings within a single study.
- This model generally uses separate quantitative and qualitative methods as a means to offset the weaknesses inherent within one method with the strengths of the other method.

- In this case, the quantitative and qualitative data collection is concurrent, happening in one phase of the research study.
- Ideally, the priority would be equal between the two methods, but in practical application the priority may be given to either the quantitative or the qualitative approach.

- This strategy usually integrates the results of the two methods during the interpretation phase.
- This interpretation can either note the convergence of the findings as a way to strengthen the knowledge claims of the study or explain any lack of convergence that may result.

- This traditional mixed methods model is advantageous because it is familiar to most researchers and can result in well-validated and substantiated findings.
- In addition, the concurrent data collection results in a shorter data collection time period as compared to one of the sequential approaches.

- This model also has a number of limitations.
- It requires great effort and expertise to adequately study a phenomenon with two separate methods.
- It also can be difficult to compare the results of two analyses using data of different forms.
- In addition, a researcher may be unclear how to resolve discrepancies that arise in the results.

Concurrent Nested Strategy

- Like the concurrent triangulation approach, the concurrent nested model can be identified by its use of one data collection phase, during which both quantitative and qualitative data are collected simultaneously.
- Unlike the traditional triangulation model, a nested approach has a predominant method that guides the project.
- Given less priority, the method (quantitative or qualitative) is embedded, or nested, within the predominant method (qualitative or quantitative).

- This nesting may mean that the embedded method addresses a different question than the dominant method or seeks information from different levels (the analogy to hierarchical analysis in quantitative research).
- The data collected form the two methods are mixed during the analysis phase of the project.
- This strategy may or may not have a guiding theoretical perspective.

- The concurrent nested model may be used to serve a variety of purposes.
- Often, this model is used so that a researcher can gain broader perspectives as a result of using the different methods as opposed to using the predominant method alone.
- A primarily qualitative design could embed some quantitative data to enrich the description of the sample participants.
- Likewise, she described how qualitative data could be used to describe an aspect of a quantitative study that cannot be quantified.

- In addition, a concurrent nested model may be employed when a researcher chooses to utilize different methods to study different groups or levels.
- For example, if an organization is being studied, then employees could be studied quantitatively, managers could be interviewed qualitatively, entire divisions could be analyzed with quantitative data, and so forth.
- This approach as a multilevel design.
- Finally, one method could be used within a framework of the other method, such as if a researcher designed and conducted an experiment but used case study methodology to study each of the treatment conditions.

- This mixed methods model has many strengths.
- A researcher is able to collect the two types of data simultaneously, during a single data collection phase.
- It provides a study with the advantages of both quantitative and qualitative data. In addition, by using the two different methods in this fashion, a researcher can gain perspectives from the different types of data or from different levels within the study.

- There are also limitations to consider when choosing this approach.
- The data need to be transformed in some way so that they can be integrated within the analysis phase of the research.
- There is little written at this time to guide a researcher through this process.
- In addition, there is little advice to be found for how a researcher should resolve discrepancies that occur between the two types of data.
- Because the two methods are unequal in their priority, this approach also results in unequal evidence within a study, which may be a disadvantage when interpreting the final results.

Concurrent Transformative Strategy

- As with the sequential transformative model, the concurrent transformative approach is guided by the researcher's use of a specific theoretical perspective.
- This perspective can be based on ideologies such as critical theory, advocacy, participatory research, or a conceptual or theoretical framework.

- This perspective is reflected in the purpose or research questions of the study.
- It is the driving force behind all methodological choices, such as defining the problem, identifying the design and data sources, analyzing interpreting, and reporting results throughout the research process.
- The choice of a concurrent model (whether it is triangulation or nested design) is made to facilitate this perspective.

- For example, the design may be nested so that diverse participants are given a voice in the change process of an organization that is studied primarily quantitatively.
- It may involve a triangulation of quantitative and qualitative data to best converge information to provide evidence for an inequality of policies in an organization.

- Thus, the concurrent transformative model may take on the design features of either a triangulation or a nested approach.
- That is, the two types of data are collected at the same time during one data collection phase and may have equal or unequal priority.
- The integration of these different data would most often occur during one data collection phase and may have equal or unequal priority.
- The integration of these different data would most often occur during the analysis phase, although integration during the interpretation phase is a possible variation.

- Because the concurrent transformative model shares features with the triangulation and nested approaches, it also shares their specific strengths and weaknesses.
- However, this model has the added advantage of positioning mixed methods research within a transformative framework, which may make it especially appealing to those qualitative or quantitative researchers already using a transformative framework to guide their inquiry.

criteria for selecting an a design

- Given these three approaches, what factors affect a choice of one approach over another for the design of a research?
- Three considerations play into this decision:

a. the research problem
b. the personal experiences of the researcher, and
c. the audience (s) for whom the report will be written.

a. Match Between Problem and Approach

- Certain types of social research problems call for specific approaches.
- For example, if the problem is identifying factors that influence an outcome, the utility of an intervention, or understanding the best predictors in outcomes, then a quantitative approach is best.
- It is also the best approach to use to test a theory or explanation.

- On the other hand, if a concept or phenomenon needs to be understood because little research has been done on it, then it merits a qualitative approach.
- Qualitative research is exploratory and is useful when the researcher does not know the important variable to examine.
- This type of approach may be needed because the topic is new, the topic has never been addressed with a certain sample or group of people, or existing theories do not apply with the particular sample or group under study.

- In short, the characteristics of a qualitative research problem are:

I. the concept is "immature" due to a conspicuous lack of theory and previous research;

II. a notion that the available theory may be inaccurate, inappropriate, incorrect, or biased;

III. a need exists to explore and describe the phenomena and to develop theory; or

IV. the nature of the phenomenon may not be suited to quantitative measures.

- A mixed methods design is useful to capture the best of both quantitative and qualitative approaches.
- For example, a researcher may want to both generalize the findings to a population and develop a detailed view of the meaning of a phenomenon or concept for individuals.
- In this research, the inquirer first explores generally to learn about what variables to study and then studies those variables with a large sample of individuals.

- Alternatively, researchers may first survey a large number of individuals, then follow up with a few of them to obtain their specific language and voices about the topic.
- In these situations the advantages of collecting both closed-ended quantitative data and open-ended qualitative data prove advantageous to best understand a research problem.

b. Personal Experiences

- An individual trained in technical, scientific writing, statistics, and computer statistical programs who is also familiar with quantitative journals in the library would most likely choose the quantitative design.
- The qualitative approach incorporates much more of a literary form of writing, computer text analysis programs, and experience in conducting open-ended interviews and observations.

- The mixed methods researcher needs to be familiar with both quantitative and qualitative research.
- This researcher needs an understanding of the rationales for combining both forms of data so that they can be articulated in a research.
- The mixed methods approach also requires knowledge about the different mixed methods designs that help organize procedures for a study.

- Because quantitative studies are the traditional mode of research, carefully worked out procedures and rules exist for the research.
- This means that researchers may be more comfortable with the highly systematic procedures of quantitative research.
- On the other hand, qualitative approaches allow room to be innovative and to work more within researcher-designed frameworks.
- For the mixed methods researcher, a project will take extra time because of the need to collect and analyze both quantitative research and the flexibility of qualitative inquiry.

c. Audience

- Finally, researchers are sensitive to audiences to whom they report their research.
- These audiences may be journal editors, journal readers, graduate committees, conference attendees, or colleagues in the field.
- Students should consider the approaches typically supported and used by their advisers.
- The experiences of these audiences with quantitative, qualitative, or mixed methods studies will shape the decision made about this choice.

- Summary
- One preliminary consideration before designing a proposal is to identify a framew2ork for the study. Three approaches to research are discussed in this chapter: quantitative, qualitative, and mixed methods research. They contain philosophical assumptions about knowledge claims, strategies of inquiry, and specific research methods. When philosophy, strategies, and methods are combined, they provide different frameworks for conducting research. The choice of which approach to use is based on the research problem, personal experiences, and the audiences for whom one seeks to write.

Chapter 5

Sampling Design

5.1. Introduction

- Sampling is the process of selecting units (e.g., people, organizations) from a population of interest so that by studying the sample we generalize our results back to the population from which they were chosen.

5.2. Important terminologies and concepts in sampling

a. Population/universe

- Is the group you wish to generalize to.
- Is the group you would like to sample from.
- It is an aggregate of items (individual, organizations…).

Cont'd…

b. Sampling Frame

- The listing of the accessible population from which you'll draw your sample is called the *sampling frame*.

Cont'd…

c. Sample

- The **sample** is the group of people who you select to be in your study.

Cont'd…

d. Statistic and Parameter

- If you measure the sample and calculate a value like a mean or average, we call it a **statistic**.
- If you measure the entire population and calculate a value like a mean or average, we call it a **parameter** of the population.

Important…cont'd…

e. Sampling Theory

- Sampling theory is a study of relationships existing between a population and samples drawn from the population.
- The main concern of sampling theory is the relationship between a parameter and a statistic.
- Sampling theory is applicable only to (probability) random samples.

Cont'd…

- The sampling theory is concerned with estimating the properties of the population from those of the sample.
- This sort of movement from particulars (samples) towards general (population) is known as **statistical induction or statistical inference.**

5.3. Sampling Design

- A sample design is a definite plan for obtaining a sample from a given population.
- It refers to the technique or the procedure the researcher would adopt in selecting items for the sample.

Design…cont'd…

5.3.1. Steps in sample Designing

- While developing a sampling design, the researcher must pay attention to the following points:

a. Defining clearly the population/ universe to be studied.

Steps…Cont'd

b. Determination of the sampling unit. (Sampling unit may be a geographical one such as state, district, village, etc., or a construction unit such as house, flat, etc., or it may be a social unit such as family, club, school, etc., or it may be an individual.

c. Identifying the sampling frame or source list. *(*Sampling frame contains the names of all items of universe). If a source list is not available, a researcher has to prepare it.

Steps…cont'd

d. Determining the sample size. (This refers to determining the number of items to be selected from the population to constitute a sample.)

e. ***Identifying the parameters of interest*** (what type of population characteristic the researcher wants to study i.e., proportion, mean, variation…)

Steps…

f. Determining the Budgetary Constraints *(*cost consideration has effect not only the size of the sample but also on overall sample design to be pursued).

g. Determining the Sampling Procedure *(*what type of sample is to be used that can minimize the sampling error).

Cont'd…

5.3.2. Errors in Sampling

- There are two types of errors in sample studies or in inference making: **sampling error and non-sample errors.**

1. **Non –sampling errors**, called systematic bias, results from errors in the sampling procedures, it can not be reduced or eliminated by increasing the sample size.

Error…cont'd

- Usually a systematic bias is the result of one or more of the following factors:

a) Inappropriate sampling frame
b) Defective measurement device (questionnaire or interview guide)
c) Non respondents
d) Indeterminacy principle(individuals may act differently when put under observation)
e) Natural bias in the reporting of data basically by the respondents.

Errors…Cont'd…

2. **Sampling errors** are the random variation in the sample estimates.

- Sampling error decreases with the increase in the size of the sample.
- It happens to be of a smaller magnitude in case of homogeneous population.
- It is measured for each sample size and design. Doing so is called measuring the *precision of the sampling plan.*

Cont'd…

5.3.3. Characteristics of Good Sample Design

- The characteristics of good sample design are
  - Representativeness.
  - Small sampling error.
  - Systematic bias can be controlled in a better way.
- Viability in the context of funds available for the research study.
- The sample study can be applied for the population with a reasonable confidence.=External validity

5.4. Sampling techniques

- There are different ways of classifying sampling methods.
- Sometimes they are classified as:
  - **Random sampling** (where the members of the sample are chosen by some random/probability mechanism)
  - **Quasi-random sampling** (where the mechanism for choosing the sample is only partly random)
  - **Non-random sampling** where the sample is specifically selected rather than randomly selected.

Techniques…cont'd…

- However, the dominant classification is the probability-non probability continuum.

a. Probability Sampling

- A **probability sampling** method is any method of sampling that utilizes some form of *random selection*.

Cont'd…

- In case of probability sample method:
- The probability or chance of every unit in the population being included in the sample is known.
- Selection of the specific units in the population depends entirely on chance.
- Different units in a population have equal probabilities of being chosen.

Types of probability sampling methods

1. Simple Random Sampling

- The simplest form of random sampling is called **simple random sampling**.
- All elements of the population has an equal chance of being selected.
- Uses a table of random numbers, a computer random number generator, or a lottery method to select the sample.
- It should be used with a homogeneous population.

SRS…Cont'd

- **Advantages of SRS**

a) It eliminates personal bias.
b) No advance knowledge of the characteristics of the population is necessary.
c) Assessment of the accuracy of the results is possible by sample error estimation.
d) The sample is true representative of the population.
e) It is very easy and easily practicable
f) Low cost, time and energy.

SRS…Cont'd

Major drawbacks of SRS.

a) If the population is large, a great deal of time must be spent listing and numbering the members.
b) The sampling method requires complete list of the universe. But such up-to date list is not available in many enquires.
c) In a field of survey if the area of coverage is large and scattered, using SRS may be quite time consuming and costly.

SRS…cont'd

d) The selected sample may not be a true representative of the universe if its size is too small.

e) A simple random sample will not adequately represent **many population attributes (characteristics)** unless the sample is relatively large.

B. Stratified Random Sampling

- This sampling begins with the identification of **some variable**, which may be related indirectly to the research question and could act as a confounder (**such as geography, age, income, ethnicity, or gender**)
- This variable is then used to divide the sampling frame into mutually exclusive *strata or subgroups.*
- Or the population is divided into several sub-populations (strata) individually more homogeneous than the total population.
- *Once* the sampling frame is arranged by strata, the sample is selected from **each stratum** using **simple random sampling or systematic sampling techniques .**

Cont'd…

- When we use the same sampling fraction within strata we are conducting *proportionate* stratified random sampling.
- When we use different sampling fractions in the strata, we call this *disproportionate* stratified random sampling.

Stratified…cont'd

- **Advantages**
  a. If a correct stratification has been made even a small number of units will form a representative sample.
  b. Under stratified sampling no significant group is left unrepresented.
  c. It is more precise and to a great extent avoids bias.

Stratified…cont'd

d) It saves cost and time of data collection since the sample size can be less.
e) Achieves different degree of accuracy for different segments of the population.
f) Replacement of case is easy if the original case is not accessible to study.
g) It is of a great advantage if the distribution of the universe is skewed.

Stratified…cont'd

- **Disadvantages**

a. It is a very difficult task to divide the universe into homogeneous strata.

b. If the strata is overlapping, unsuitable or disproportionate, the selection of the sample may not be representative.

Stratified…cont'd

c. If stratification is faulty, it can not be corrected by taking large size of sample.

d. Disproportionate stratification requires weighting which adds complexity and bias.

C. Systematic Random Sampling

- The systematic random sampling technique begins with selecting one element at random **in the sampling frame** as the starting point, however, from this point onward, the rest of the sample is selected systematically by applying a predetermined interval.

Cont'd…

The steps you need to follow are:

1. Number the units in the population from 1 to N
2. decide on the n (sample size) that you want
3. k = N/n = the interval size
4. randomly select an integer between 1 to k
5. then take every kth unit

Systematic…cont'd

- For this to work, it is essential that the units in the population are randomly ordered, at least with respect to the characteristics you are measuring.

Systematic…Cont'd

- **Advantages**

a. It is easy to do. You only have to select a single random number to start things off.

b. It may also be more precise than simple random sampling.

Systematic…Cont'd

c. In some situations there is simply no easier way to do random sampling.

d. Randomness and probability features are present in this model which makes sample representative.

Systematic…Cont'd

- **Disadvantages**

a) It works well only if the complete and up-to-date frame is available and if the units are randomly arranged.

b) Any hidden periodicity in the list will adversely affect the representativeness of the sample.

D. Cluster (Area) Random Sampling

- In Cluster sampling the total population is divided into a number of relatively small subdivisions which are themselves clusters of still smaller units and then some of these clusters are randomly selected for inclusion in the overall sample
- Concerns with the natural geographic area.

- For cluster sampling your sampling frame is the complete list of clusters rather than a complete list of individual cases within the population.
- You then select a few clusters, normally using simple random sampling.
- Data are then collected from every case within the selected clusters.

Cont'd…

- In cluster sampling, we follow these steps:

1. Divide population into clusters (usually along geographic boundaries or any naturally occurring grouping. For example, you could group your data by type of manufacturing firm or geographical area)
2. Randomly sample clusters.
3. Measure all units within sampled clusters.

Cluster…cont'd

Advantages

1. Significant cost gain.
2. Easier and more practical method which facilitates the field work.

Cluster…cont'd

Disadvantages

1. Probability and the representativeness of the sample are sometimes affected, if the number of the cluster is very large.
2. The results obtained are likely to be less accurate if the number of sampling units in each cluster is not approximately the same.

E. Multi-Stage Sampling

- combines the simple methods described earlier in a variety of useful ways.

Multi-Stage…cont'd

- For example, consider the problem of sampling students in schools.
- We might begin with a national sample of school districts stratified by economy and educational level.
- Within selected districts, we might do a simple random sample of schools.
- Within schools, we might do a simple random sample of classes or grades.
- And, within classes, we might even do a simple random sample of students.

Multi-Stage…cont'd

- In this case, we have three or four stages in the sampling process and we use both stratified and simple random sampling.

Multi-Stage…cont'd

- **Advantages**

1. It is more flexible in comparison to other methods of sampling.
2. It is simple to carryout and results in administrative convenience by allowing the field work to be concentrated and yet covering large area.

Multi-Stage…cont'd

3. It is of great significant in surveys of underdeveloped areas where an up-to-date and accurate frame is not generally available for subdivision of the material into reasonably small sampling units.
4. It is reliable and satisfactory technique and by using this sample surveys can be conducted with considerable speed.

Multi-Stage…cont'd

- **Disadvantages**

1. Errors are likely to be large in comparison to others.
2. It is less efficient than a suitable single stage sampling of the same.
3. It involves considerable amount of listing of first stage units, second stage units etc.

b. Non-probability Sampling

- Are sometimes known as “Purposeful sampling strategies
- Often used for qualitative studies
- Qualitative research methods are typically used when focusing on a limited number of informants, whom you select *strategically so that* their in-depth information will give optimal insight into an issue about which little is known.
- *There are* several possible strategies from which a researcher can choose.
- Often different strategies are combined, depending on the topic under study, the type of information wanted and the resources of the investigator(s).

- The difference between non-probability and probability sampling is that non-probability sampling does not involve *random* selection and probability sampling does.
- In general, researchers prefer probabilistic or random sampling methods over non-probabilistic ones, and consider them to be more accurate and rigorous.

Non-probability … cont'd

- In case of non-probability sampling method:

1. The probability of inclusion of any units (of population) in a sample is not known.
2. The selection of units within a sample involves human judgment rather than pure chance.

Non-probability…cont'd

- We can divide non-probability sampling methods into two broad types:
  - *Accidental* or
  - *Purposive*.

1. Accidental, Haphazard or Convenience Sampling

- One of the most common methods of sampling.
- "Man on the street" (of course, now it's probably the "person on the street").

Accidental…cont'd

- This method may be used in the following cases:

1. The universe is not clearly defined
2. Sampling unit is not clear
3. A complete source list is not available.

b. Purposive Sampling

- In purposive sampling, we sample with a *purpose* in mind.
- We usually would have one or more specific predefined groups we are seeking.
- Purposive sampling can be very useful for situations where:
  - You need to reach a targeted sample quickly and
  - Sampling for proportionality is not the primary concern.

Purposive…cont'd

- **Advantages**

1. More economical and less time consuming.
2. Ensures proper representation of a cross-section of various strata of the universe if the researcher has full knowledge of the composition of the universe.

Purposive…cont'd

3. It is very useful when some of the units are very important and their inclusion in the study is necessary.
4. It is a practical method where randomization is not possible.

Purposive…cont'd

- **Disadvantage**

1. Considerable prior knowledge of the universe is necessary which in most cases is not possible.
2. There is very possibility of the selection of biased samples.
3. The calculation of sample error is not possible. Therefore, the hypothesis can not be tested.

Purposive…cont'd

- All of the methods that follow can be considered subcategories of purposive sampling methods.

2.1. Modal Instance Sampling

- In sampling, when we do a modal instance sample, we are sampling the most frequent case, or the "typical" case.

Purposive…cont'd

2.2. Expert Sampling

- Expert sampling involves the assembling of a sample of persons with known or demonstrable experience and expertise in some area.

Purposive…cont'd

2.3. Quota Sampling

- In quota sampling, you select sample members according to some fixed quota.
- This method is the non-probabilistic analogue of stratified random sampling.

Quota…cont'd

- There are two types of quota sampling: *proportional* and *non proportional*.
- In **proportional quota sampling** is sampling a proportional amount of each group.

Purposive…cont'd

- **Non-proportional quota sampling**: Here, you're not concerned with having numbers that match the proportions in the population.

Purposive…cont'd

Advantages

- Quota sampling is a stratified-cum-purposive sampling and thus enjoys the benefits of both sampling techniques.

1. It makes the best use of stratification economically.
2. Practical and convenient method.
3. Likely to give accurate results.
4. Is the only useful method when no sample frame is available.

Disadvantages

Suffers from the limitations of both stratified and purposive sampling.

a) Since it is not based on random sampling, the sampling error as well as standard error cannot be estimated.
b) Since the samples are not selected randomly, it may be less representative.
c) High risk of biasness.

Purposive…cont'd

2.3. Snowball Sampling

- In snowball sampling, you begin by identifying someone who meets the criteria for inclusion in your study. You then ask them to recommend others who they may know who also meet the criteria.
- It is especially useful when you are trying to reach populations that are inaccessible or hard to find.

5.5. Sample Size

- When considering collecting data, it is important to ensure that the sample contains a sufficient number of members of the population for adequate analysis to take place.
- Larger samples will generally give more precise information about the population.

Size…cont'd

- Size of the sample can be determined by a researcher keeping in view the following points:

a) **Nature of the universe**

- Universe may be either homogeneous or heterogeneous in nature.
- If the items of the universe are homogeneous, a small sample can serve the purpose.
- If the items are heterogeneous, a large sample would be required.

Size…cont'd

b) **Number of classes proposed**

- If many class-groups (groups and sub groups) are to be formed, a large sample would be required because a small sample might not be able to give a reasonable number of items in each class groups.

Size…cont'd

c) **Nature of the study**

- If items are to be intensively and continuously studied, the sample should be small.
- For a general survey the size of the sample should be large, but small sample is considered appropriate in technical surveys.

Size…cont'd

d) **Type of sampling**

- A small random sample is apt to be much superior to a larger but badly selected sample.

Size…cont'd

e. **Standard of accuracy and acceptable confidence level**

- If the standard of accuracy or the level of precision is to be kept high, we shall require relatively larger sample.

Size…cont'd

f) **Availability of finance**

- In practice, size of the sample depends upon the amount of money available for the study purposes.
- This factor should be kept in view while determining the size of sample for large samples result in increasing the cost of sampling estimates.

Size…cont'd

g) **Other considerations**

- Nature of units
- Size of the population
- Size of the questionnaire,
- Availability of trained investigators
- The condition under which the sample is being conducted
- The time available for completion of the study

Method of Determining the Sample Size

- The method of determining sample size include the following:

a. ***Arbitrary Approach:***

- Uses a "rule of thumb "to determine the sample size.
- The researcher may determine, for instance, the sample size should be 5% of the population.
- Arbitrary sample size are simple and easy to apply, but they neither efficient not economical.

b. Conventional Approach

- Follows some "convention", number believed somehow to be the right sample size.
- The convention might be an average of the sample sizes of similar studies,
- it might be the largest sample size of previous surveys, or
- it might be equal to the sample size of a competitor's survey.
- For instance, the researcher may take the conventional sample size of between 1000 and 1200 as determined by the industry.
- Use of a conventional sample size can result in a sample that may be too small or too large.

c. Mathematical Determination of Sample Size

- Uses mathematical formula developed.
- The following three parameters are required to calculate the sample size.

i. Variance or heterogeneity of the population

- The sample size depends up on the variance of the population.
- Researcher can conduct the pilot study for the purpose of estimating the population parameter.
- Rule of the thumb can also be used to estimate population SD =SD is expected to be one sixth of the range

ii. Magnitude of error

- Indicates how precise the study must be.
- It is acceptable error for the study

iii. Confidence interval

- In most social sciences researches 95% confidence level is used.
- That is, assumed that 95 times out of 100 the estimate from sample will include the population parameter.

Cont'd…

- The mathematical formula is,

$$n = \frac{zs}{e^2}$$

$$n = \frac{N}{1 + e^2 N}$$

- Where
- N=Population size
- n=sample size
- Z=standardization value indicating a confidence Level
- e=acceptable magnitude of error.
- s= Sample Standard Deviation or an estimate of the population Standard Deviation.

Sample size in qualitative studies

- There are no fixed rules for sample size in qualitative research.
- The size of the sample depends on what you try to find out, and from what different informants or perspectives you try to find that out.
- You can start with two or four Focus Group Discussions (FGDs) depending on the complexity of the research objectives.
- If the different data sets reconfirm each other you may stop at this point;
- otherwise you conduct one or two FGDs more till you reach the point of *redundancy, i.e. no new data comes up any more*.

- *In exploratory* studies, the sample size is therefore **estimated beforehand as** precisely as possible, but **not determined.**
- **Richness of the data and** analytical capability of the researcher determine the validity and meaningfulness of qualitative data more than sample size.
- Still, sampling **procedures and sample size should always be carefully** explained in order to avoid the allusion of haphazardness.

Chapter 6

Sources of Data and Method of Data Collection

6.1. Introduction

- Collection of data refers to a purposive gathering of information relevant to the subject matter of the study from the units under investigation.

6.2. Sources of data

- There are two types of data to be used in research endeavors.
- These are:
  - Secondary data
  - Primary data

6.2.1. Secondary Sources of Data

- Secondary data means data that are already available i.e., they refer to the data which have already been collected and analyzed by some one else.
- Secondary data are collected by others and used by others.
- Any data that has been collected earlier for some other purpose are secondary data in the hands of an individual who is using them.

6.2.1.1. Collection of Secondary Data

- Secondary data may either be published or unpublished data.
- Usually published data are available in:
  - Various publications of the central, state, or local government
  - Various publications of international bodies or their subsidiaries or foreign governments
  - Technical or trade journals

Cont'd…

- Books, magazines and news papers
- Reports and publications of various organizations
- Reports of research scholars in different fields
- Public records and statistics
- Historical documents and other sources of published information.

Advantages of Secondary Data

1. **Economical**
2. **Saves Time**
3. **Improves an understanding of the problem**
4. Used as a basis for **comparison** with the primary data that have been collected.
5. Familiarity with secondary data **indicates gaps** in knowledge.

Limitations of Secondary Data

1. The unit in which secondary data are expressed may not be the same as is required in the proposed study.
2. Class boundaries may be different from those desired.
3. One does not always know how accurate the secondary data are.
4. A severe limitation in the use of secondary data is that they may be somewhat **out of date**.

Evaluating Secondary Data

1. ***Availability of Secondary Data***

- The first and foremost requirement is that secondary data must be available for use.
- At times, one may find that secondary data are just not available on a problem at hand.
- In such cases, there is no alternative but to take resources to the collection of primary data.

2. Relevance/suitability of the data

- Relevance means that the data available must fit the requirements of the problem.
- This would cover several aspects
  - Unit of measurement should be the same as that in the problem at hand.
  - The concepts used should be the same as are envisaged in the problem.
  - The data should not be obsolete.

3.Reliability of the data

- The reliability can be tested by finding out such things about the said data:
  - Who collected the data
  - What were the sources of the data
  - Were they collected by using proper method
  - At what time were they collected
  - Was there any bias of the complier
  - What level of accuracy was desired? Was it achieved?

4. Accuracy

- The other requirement is that the data should be accurate.
- In this connection the researcher should consult the original source. This would not only enable one to get more comprehensive information but would also indicate the context in which data have been collected, the procedure followed and the extent of care exercised in their collection.

5. Sufficiency

- The data should be sufficient.
- If the data are inadequate, then compliance with the preceding requirements will be vain.

6.3. Primary Data

- Primary data are original observations collected by the researcher or his agents for the first time.

Advantages of Primary Data

1. **Greater details.**
2. **More accurate**.
3. As it involves definitions of terms and units used, it enhances the investigators' **understanding of** the meaning of units in which data are recorded.
4. It indicates schedule, the procedure used in selecting the sample and size of the sample.

Methods of Primary Data Collection

- There are several methods of collecting primary data
- Important ones are:

1. Questionnaires
2. Schedules
3. Interview method
4. Observation method
5. Others

Cont'd…

- The most common means of collecting data are the interview and the questionnaire.
- In the past, the interview has been the most popular data-collecting instrument.
- Recently, the questionnaire has surpassed the interview in popularity.

1. The Questionnaire

- **is a formulated series of questions, especially for statistical analysis.**

The advantages

1. Lower costs
2. Better samples
3. Standardization
4. Respondent privacy (anonymity)
5. It is free from the bias of the interviewers, answers are in respondents own words.
6. Respondents have adequate time to give well thought out answers.
7. Respondents, who are not easily approachable, can also be reached conveniently.

Disadvantages

1. Non-returns
2. Misinterpretation
3. Validity problems.
4. It can be used only when respondents are educated and cooperating.

Cont'd…

4. The control over the questionnaire may be lost once it is sent.
5. There is inbuilt inflexibility because of the difficulty of amending the approach once questionnaires have been dispatched.
6. It is the slowest of all.

THE Contents of a questionnaire

- There are three portions of a questionnaire
  - **the cover letter,**
  - **the instructions, and**
  - **the questions**

The cover letter

- It should explain to the respondent the purpose of the survey and motivate him to reply truthfully and quickly.
- If possible, it should explain why the survey is important to him, how he was chosen to participate, and who is sponsoring the survey (the higher the level of sponsorship the better).
- Also the confidentiality of the results should be strongly stressed.
- It should identify the survey as official.

The instructions

- It explains how to complete the survey and where to return it.

The questions

- The third and final part of the questionnaire is the **set of questions**.

Types of Questionnaires

- **Based on the situation of survey**

1. Mail Questionnaires

- Sent through mail.

Cont'd…

- There are many advantages to mail surveys.
  1. They are relatively inexpensive to administer.
  2. They allow the respondent to fill it out at their own convenience.

Cont'd…

There are some disadvantages as well.

1. Response rates from mail surveys are often very low.
2. Mail questionnaires are not the best vehicles for asking for detailed written responses.

2. Self –administered Questionnaires:

Are of two types:

- The first type is the **group administered questionnaire**.
  - A sample of respondents is brought together and asked to respond to a structured sequence of questions.

3.Household Drop-off

- A less familiar type of questionnaire is the **household drop-off** survey.
- In this approach, a researcher goes to the respondent's home or business and hands the respondent the instrument.

2. Types of questionnaire based on Variable of structure or response format

- It is how the answer from the respondent is collected.
- Accordingly, we have:
  - **Structured/ standardized questionnaire**
  - **Unstructured/ non-structured questionnaire.**

Structured questionnaires/response formats

- are those in which there are definite, concrete and preordained questions.
- Includes:

a) **Fill- In-The-Blank.**
b) **Check The Answer**.
c) **Circle The Answer**.

Unstructured questionnaires/ Response Formats

- Generally, it is written text.
- If the respondent writes down text as the response, you've got an unstructured response format.

Questionnaire Construction Decisions

1. **Keep the language simple.**
   - Analyze your audience and write on their level.
   - It is usually suggested that writing at the sixth grade level may be appropriate.
   - Avoid the use of technical terms or jargon.

2. Keep the questions short

- Long questions tend to become ambiguous and confusing.
- A respondent, in trying to comprehend a long question, may leave out a clause and thus change the meaning of the question.

3. Keep the number of questions to a minimum

- There is no commonly agreed on maximum number of questions that should be asked, but research suggests higher return rates correlate highly with shorter surveys.
- Ask only questions that will contribute to your survey. Apply the "So what?" and "Who cares?" tests to each question.
- "Nice-to-know" questions only add to the size of the questionnaire.
- Do not leave out, however, questions that would yield necessary data simply because it will shorten your survey. If the information is necessary, ask the question.

4. Limit each question to one idea or concept

- A question consisting of more than one idea may confuse the respondent and lead to a meaningless answer.
- Consider this question: “Are you in favor of raising pay and lowering benefits?”
- What would a “Yes (or No)” answer mean?

5. Do not ask leading questions

- Leading questions are worded in a manner that suggests an answer.
- Some respondents may give the answer you are looking for whether or not they think it is right.
- Such questions can alienate the respondent and may open your questionnaire to criticism.
- A properly worded question gives no clue as to which answer you may believe to be the correct one.

6. Use subjective terms such as good, fair, and bad sparingly/economically, if at all

- These terms mean different things to different people.
- One person's “fair” may be another person's “bad.”
- How much is “often” and how little is “seldom?”

7. Allow for all possible answers

- Respondents who cannot find their answer among your list will be forced to give an invalid reply or, possibly, become frustrated and refuse to complete the survey.
- Wording the question to reduce the number of possible answers is the first step.

8. Avoid emotional or morally charged questions and too direct questions

- There are times when asking a question too directly may be too threatening or disturbing for respondents. The respondent may feel your survey is getting a bit too personal!

9. Formulate your questions and answers to obtain exact information and to minimize confusion

- The survey author has to always be on the lookout for questions that could be misunderstood or confusing. Some terms are just too vague to be useful. For instance, if you ask a question about the "mass media," what do you mean? The newspapers? Radio? Television? “How old are you?” mean on your last or your nearest birthday? Does “What is your (military) grade?” mean permanent or temporary grade? As of what date?
- By including instructions like “Answer all questions as of (a certain date)”, you can alleviate many such conflicts.

10. Include a few questions that can serve as checks on the accuracy and consistency of the answers as a whole

- Have some questions that are worded differently, but are soliciting the same information, in different parts of the questionnaire.
- These questions should be designed to identify the respondents who are just marking answers randomly or who are trying to game the survey (giving answers they think you want to hear).

11. Understand the “should-would” question

- Usually respondents answer “should” questions from a social or moral point of view while answering “would” questions in terms of personal preference.

Cont'd…

12. Organize the pattern of the questions appropriately:

- Place demographic questions at the beginning of the questionnaire.
- Have your opening questions arouse interest.
- Ask easier questions first.

Cont'd…

- Have general questions precede specific ones.
- Group similar questions together.
- If you must use personal or emotional questions, place them at the end of the questionnaire.

Cont'd…

- Thank the respondent at the beginning and at end
- Assure the respondent that you will send a copy of the final results.

Cont'd…

13. **Pretest (pilot test) the questionnaire.**
14. **Have your questionnaire neatly produced on quality paper.**
15. **Be realistic in assuming about the respondents.**
16. **Finally, make your survey interesting!**

2. Schedules

- Schedules are questionnaires filled by the enumerators.

Advantages

1. It can be adopted even in those cases where informants are illiterates.
2. It eliminates to a great extent the problem of non-response
3. The enumerator can explain the significance of the inquiry and the questions in the questionnaire personally to the informants and thus ensuring collection of accurate and reliable information.

Limitations

1. The enumerator might be biased one and may not enter the answers given by the respondents truthfully.
2. Where there are many enumerators, they may interpret various terms in the questionnaire according to their own understanding of the terms.

Limitations …cont'd

3. The bias might be arising due to the state of mind of the informant or the environment in which he is placed.
4. It is some what costly and time consuming.

Difference between questionnaires and Schedules

a) The questionnaire can be sent through mail whereas the schedule is filled out by the research worker or the enumerator.
b) Questionnaire is relatively economical.
c) Non-response is usually high in case of questionnaire.
d) In case of questionnaire, it is not always clear as to who replies, but in case of schedule the identity of the respondent is known.

Differences…cont'd…

e) The questionnaire method is likely to be slow than schedule.

f) Personal contact is generally not possible in case of the questionnaire method, but in case of schedules direct personal contact is established with respondents.

g) Questionnaire method is only used when respondents are literate and cooperative, but in case of schedules the information can be gathered even when the respondents happen to be illiterate.

Differences…cont'd…

h) Wider and more representative sample coverage is possible in case of questionnaire method, whereas in schedule this may not be easy.

i) Risk of collecting incomplete and wrong information is relatively high in case of questionnaire method than in case of schedule.

Differences… cont'd…

h) The success of questionnaire method lies more on the quality of the questionnaire itself, but in case of schedules much depends upon the honesty and competence of enumerators.

i) Along with schedules observation method can be used but such thing is not possible in case of questionnaire method.

Testing Reliability and Validity of Questionnaire

- **Reliability** refers to consistency or replicability of findings.
- **Validity** refers to the truthfulness of findings.

- Questionnaire validity asks whether the questionnaire measures what it is intended to measure.
- A study can be reliable but not valid - a consistently wrong finding.
- But a study cannot be valid without first being reliable.
- You cannot assume validity no matter how reliable your measurements are.

- Standard Statistics and Econometrics software routines such as SPSS and STATA have features that calculate internal validity of a questionnaire using split half method.
- The Cronbach's Alpha Coefficient is the most commonly used one.

3. Interviews

- Interviews are among the most challenging and rewarding forms of data collection technique.

Types of Interviews

Among the major techniques and approaches to interviewing are the following.

a. Face-to Face Interviews /Personal Interviews

- In the **personal interview**, the interviewer works directly with the respondent.

Advantages of Personal Interviews

1. It has the highest response rates.
2. Quick response can be attained.
3. Personal contacts are involved
4. Follow up questions can be asked.
5. It permits the longest questionnaire.

Advantages…cont'd…

6. Higher flexibility.
7. Interviewers can observe the surroundings and can use nonverbal communication and visual aids.
8. The interviewer can control who answers the questions.
9. All types of questions can be asked including complex questions using illustrations and extensive probes.

Disadvantages of Personal Interviews

1. Interviews can be very time consuming
2. Interviews are resource intensive or very expensive as training, travel, supervision cost are added.
3. Interviewer bias is greatest.
4. The interviewer's wording, tone of voice, appearance may matter.

b. Telephone interview

- It is a popular survey method.

Advantages

1. Telephone interviews enable to gather information rapidly.
2. They allow some contact between the interviewer and the respondent.
3. They allow the interviewer to ask follow-up questions.

Advantages…cont'd…

4. They are cheaper than the personal interview.
5. No field staff is required.
6. Representative and wider distribution of sample is possible.

Disadvantages

1. Many people don't have publicly-listed telephone numbers. Some don't have telephones.
2. People often don't like the intrusion of a call to their homes.
3. Telephone interviews have to be relatively short or people will feel imposed upon.

Cont'd…

4. Noise may interrupt the process.
5. Possibility of the bias of the interviewer is relatively more.
6. It is not suitable for intensive surveys where comprehensive answers are required to various questions.

Focus Group Discussion

- In some areas of management research the focus group has become the most widely used form of interview technique.
- The term *focus group has superseded* the old term used to describe this kind of research which was *group discussion*.
- Focus groups normally consist of between six and ten participants.
- A trained researcher or *moderator steers the group to discuss predetermined* areas or aspects that the researcher is interested in exploring.
- This is where the term 'focus' comes from in that the interviewer will focus the discussion between members of the group into these areas.
- This focusing usually takes the form of a prompt or some sort of stimulus introduced by the moderator that is relevant to the researcher's interest. For example, the moderator might ask the group to consider *attitudes towards female managers in the organization*.

4. Observation Method

- Observation is one of the methods of collecting data.
- It is the most commonly used method especially in studies related to behavioral sciences.

Advantages of observation method

1. The direct observational technique enables the investigator to record the behavior as it occurs.
2. It can be used regardless of whether the respondent is willing to report or not.
3. It can be used even when it pertains to those who are unable to respond, such as an infants and animals.

Limitations of Observation method

1. Only the current behavior of a person or group of persons can be observed.
2. It doesn't help us in gauging a person's attitude or opinion or knowledge on a certain subject.
3. The observational method is very slow

Disadvantages…cont'd…

4. It is an expensive method
5. The information provided by this method is very limited.
6. Sometimes unforeseen factors may interfere with the observational task.

6.4. Selecting the Data collection Method

- Selecting the type of survey you are going to use is one of the most critical decisions in many social research contexts.
- There are some points that may be considered in selecting the appropriate method of data collection.

Population/sample Issues

- The first set of considerations has to do with the population and its accessibility.
- Can the population be enumerated/listed?
- Is the population literate?
- Are there language issues?
- Will the population cooperate?

Population…cont'd…

- What are the geographic restrictions?
- Are response rates likely to be a problem?

Question Issues

- Sometimes the nature of what you want to ask respondents will determine the type of survey you select.
- What types of questions can be asked?
- How complex will the questions be?
- Will lengthy questions be asked?

Content Issues

- The content of your study can also pose challenges for the different survey types you might utilize.
- Will respondent need to consult records?

Bias Issues

- People come to the research endeavor with their own sets of biases and prejudices.
- Can social desirability be avoided?
- Can interviewer distortion and subversion be controlled?
- Can false respondents be avoided?

Administrative Issues

- Last, but certainly not least, you have to consider the feasibility of the survey method for your study.
  - costs
  - facilities
  - time
  - personnel

Chapter 7

Analysis the Data

7.1 The Process of data Analysis

- Having collected his or her quantitative data, the researcher's next task is to analyze it.
- The aim of data analysis is to obtain results that test the study research questions or hypotheses as accurately and easily as possible.

- The data, after collection, has to be processed and analyzed in accordance with the outline laid down for the purpose at the time of developing the research plan.
- This is essential for a scientific study and for ensuring that we have all relevant data for making contemplated comparisons and analysis.

- The term analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data-groups.
- In short, the process of data analysis implies editing, coding, classification and tabulation of collected data as well as statistical tests of significance to accept or reject formulated hypotheses in the study.

The main stages

- Data analysis occurs in three main stages:

I. Data preparation
II. Checking the suitability of the data.
III. Testing the research questions or hypotheses.

Stage I: Data Preparation

a. Logging/Recording the Data

- For the incoming data from different sources you need to set up a procedure for logging the information and keeping track of it.
- To do so, in most cases, researchers set up a database that enables to assess at any time what data is already in and what is still outstanding.
- This can be done with any standard computerized database program (e.g., Microsoft Access, Claris Filemaker).
- Or you can accomplish these using standard statistical programs (e.g., SPSS, SAS, Minitab, Data desk).

b. Checking the Data for Accuracy/ Editing

- Editing of data is a process of examining the raw collected data to detect errors and omissions and to correct these when possible.
- Editing is done to assure that the data are accurate, consistent with other facts gathered, uniformly entered, as complete as possible and have been well arranged to facilitate coding and tabulation.

Editing…Cont'd…

- There are several questions you should ask as part of this initial data screening:
  - Are the responses legible/ readable?
  - Are all important questions answered?
  - Are the responses complete?
  - Is all relevant contextual information included (e.g., data, time, place, researcher)?

- 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 decipher.

- 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.

- **Missing Value Imputation:** Virtually all databases have some number of missing values. Unfortunately, statistical analysis of data sets with **missing values can result in biased results and incorrect inferences.**
- A few of the more widely used imputation techniques include the following

Contd.

- **Hot deck imputation:** In this imputation technique, the researcher matches participants on certain variables to identify potential donors.
- Missing values are then replaced with values taken from matching respondents (i.e., respondents who are matched on a set of relevant factors).
- **Predicted mean imputation:** Imputed values are predicted using certain statistical procedures (i.e., linear regression for continuous data and discriminant function for dichotomous or categorical data).

cont'd…

- **Last value carried forward:** Imputed values are based on previously observed values. This method can be used only for longitudinal variables, for which participants have values from previous data collection points.
- **Group means:** Imputed variables are determined by calculating the variable's group mean (or mode, in the case of categorical data).

- All the wrong replies, which are quite obvious, must be dropped from the final results, especially in the context of mail surveys.

- Editors must keep in view several points while performing their work:
- (a) They should be familiar with instructions given to the interviewers and coders as well as with the editing instructions supplied to them for the purpose.
- (b) While crossing out an original entry for one reason or another, they should just draw a single line on it so that the same may remain legible.
- (c) They must make entries (if any) on the form in some distinctive colur and that too in a standardised form.

- (d) They should initial all answers which they change or supply.
- (e) Editor's initials and the date of editing should be placed on each completed form or schedule.

Tabulation

- Is the process of summarizing raw data and displaying the same in compact form (i.e., in the form of statistical tables) for further analysis.
- Is an orderly arrangement of data in columns and rows.

Generally accepted principles of tabulation:

- Such principles of tabulation, *particularly of* constructing statistical tables, can be briefly states as follows:

I. Every table should have a clear, concise and adequate title so as to make the table intelligible without reference to the text and this title should always be placed just above the body of the table.

II. Every table should be given a distinct number to facilitate easy reference.

III. The column headings (captions) and the row headings (stubs) of the table should be clear and brief.

IV. The units of measurement under each heading or sub-heading must always be indicated.

V. Explanatory footnotes, if any, concerning the table should be placed directly beneath the table, along with the reference symbols used in the table.

VI. Source or sources from where the data in the table have been obtained must be indicated just below the table.

VII. Usually the columns are separated from one another by lines which make the table more readable and attractive. Lines are always drawn at the top and bottom of the table and below the captions.

VIII. There should be thick lines to separate the data under one class from the data under another class and the lines separating the sub-divisions of the classes should be comparatively thin lines.

IX. The columns may be numbered to facilitate reference.

X. Those columns whose data are to be compared should be kept side by side. Similarly, percentages and/or averages must also be kept close to the data.

Stage II: Checking Suitability of the Data

- Initial data analyses are performed in order to test for assumptions underlying the data, to gain descriptive data and to help determine the property of the measures.
- Thus, this stage of data analysis consists of initial or preliminary data analyses, to describe the sample, check for data errors, check the reliability of measures for the sample, construct scale scores, and check if the data have the properties that will allow the intended techniques of analysis to be used.

- In general, the steps involved in analyzing the data are summarized as follow:
- **Step 1** Report information about the number of members of the sample who did and did not return the survey.
- A table with numbers and percentages describing respondents and non- respondents is a useful tool to present this information.

- **Step 2** Provide a descriptive analysis of data for all independent and dependent variables in the study. This analysis should indicate the means, standard deviations, and range of scores for these variables.

- **Step 3** If the study contains an instrument with scales, identify the statistical procedure (i.e., factor analysis) for ensuring the quality of the data collected.
- Also check the reliability of the responses collected for the internal consistency of the scales (i.e., the Cronbach alpha statistic).

Stage III: Tests Research Questions/ Hypotheses

- **This involves i**dentifying the statistics and the statistical computer program for testing the major questions or hypotheses in the study.
- This choice of statistical test is based on

a. The nature of the research question (e.g., relating variables or comparing groups as the most popular),
b. The number of independent and dependent variables, and the number of covariates.
c. The measurement of the variables (as continuous or categorical)
d. The type of distribution of scores (normal, non normal).

7.2 Statistics in Research

7.2.1 Descriptive Statistics

- *Descriptive Statistics* are used to describe the basic features of the data in a study.
- In descriptive statistics we are simply describing what is or what the data shows.
- They provide simple summaries about the sample and the measures.
- With descriptive statistics you are simply describing what is, what the data shows.

- There are three major types of descriptive statistics:
  - the distribution
  - the central tendency
  - the dispersion

The Distribution

- The distribution is a summary of the frequency of individual values or ranges of values for a variable.
- The simplest distribution would list every value of a variable and the number of persons who had each value.

Distribution…cont'd…

- There is a variety of methods for examining the distribution of a variable.
- Perhaps the most basic method, and the starting point and foundation of virtually all statistical analyses, is the frequency distribution
- *Frequency distribution is simply a complete list of all possible values or scores* for a particular variable, along with the number of times (frequency) that each value or score appears in the data set

- There is a variety of methods for examining the distribution of a variable.
- Perhaps the most basic method, and the starting point and foundation of virtually all statistical analyses, is the frequency distribution *frequency distribution is simply a complete list of all possible values or scores* for a particular variable, along with the number of times (frequency) that each value or score appears in the data set

- Frequency is the count of each category in a certain variable.
- This count is often expressed as a percentage form or cumulative percentage form
- **Frequency of Males and Females in the Data Set**

	Gender		
Count	*f*	*m*	*Grand Total*
Total	216	258	474

- **Percentages of Males and Females in the Data Set**

	Gender		
Count	*f*	*m*	*Grand Total*
Total	45.57	54.43	100.00

e.g.2 Test score of students

- **Frequency Distribution of Test Scores**

Value	Frequency	Cumulative Frequency
71	1	1
76	1	2
78	2	4
81	2	6
82	1	7
83	1	8
84	2	10
85	2	12
86	2	14
87	1	15
89	1	16
90	2	18
94	3	21
98	1	22
100	1	23

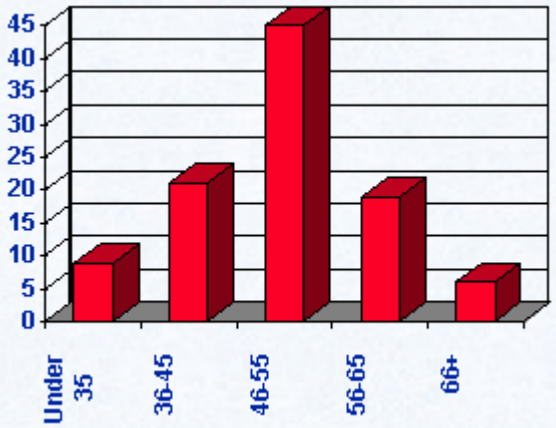
Grouped Frequency Distribution of Test Scores

Value	Frequency	Cumulative Frequency
71–75	1	1
76–80	3	4
81–85	8	12
86–90	6	18
91–95	3	21
96–100	2	23

Contd.

- Still another way that this distribution may be depicted is in what is known as a **histogram**.
- A *histogram is nothing more than a* **graphic display of the same information contained in the frequency tables.**
- Although frequency tables and histograms provide researchers with a general overview of the distribution, there are more precise ways of describing the shape of the distribution of values for a specific variable.
- These include measures of **central tendency and dispersion.**

Fig1.



Central Tendency/statistical average

- The central tendency of a distribution is an estimate of the "center" of a distribution of values.
- Tells us the point about which items have a tendency to cluster.
- There are three major types of estimates of central tendency:
- The **Mean** or average or arithmetic mean is probably the most commonly used method of describing central tendency.

-To compute the mean add up all the values and divide by the number of values.

Central…cont'd…

- The **Median** is the score found at the exact middle of the set of values.

-One way to compute the median is to list all scores in numerical order, and then locate the score in the center of the sample.

- The **mode** is the most frequently occurring value in the set of scores. To determine the mode, you might again order the scores and then count each one. The most frequently occurring value is the mode.

Dispersion

- Dispersion refers to the spread of the values around the central tendency. The common measures of dispersion include the **range**, the **variance** and the **standard deviation**.

7.2.2 Inferential statistics

- **Inferential Statistics** is statistics that help to establish relationships among variables and draw conclusion there from. We might be interested to know or infer from the data through analysis.

Overview of the different inferential statistical techniques

- **Inferential statistical techniques are generally** broken into two main parts.

1. The techniques that are used to explore the *relationship among variables (e.g. between* age and optimism)
2. The techniques that are used to explore the *differences between groups (e.g. sex differences in optimism* scores).

Exploring relationships

- Often in survey research you will not be interested in differences between groups, but instead in the strength of the relationship between variables.
- There are a number of different techniques that you can use.

a. Correlation

- Pearson correlation or Spearman correlation is used when you want to explore the strength of the relationship between two continuous variables.
- This gives you an indication of both the direction (positive or negative) and the strength of the relationship.
- A positive correlation indicates that as one variable increases, so does the other.
- A negative correlation indicates that as one variable increases, the other decreases.

b. Partial correlation

- Partial correlation is an extension of Pearson correlation-it allows you to control for the possible effects of another confounding variable.
- Partial correlation 'removes' the effect of the confounding variable (e.g. socially desirable responding), allowing you to get a more accurate picture of the relationship between your two variables of interest.

c. Regression

- In the previous subtopic, we looked at how to measure relationships between two variables.
- These correlations can be very useful but we can take this process a step further and predict one variable from another.
- A simple example might be to try to predict levels of stress from the amount of time until you have to give a talk. You'd expect this to be a negative relationship (the smaller the amount of time until the talk, the larger the anxiety).
- We could then extend this basic relationship to answer a question such as 'if there's 10 minutes to go until someone has to give a talk, how anxious will they be?'

- This is the essence of regression analysis: we fit a model to our data and use it to predict values of the dependent variable (DV) from one or more independent variables (IVs).
- Regression analysis is a way of predicting an **outcome variable from one predictor variable (simple regression) or several** predictor variables (**multiple regression).**

d. Multiple regression

- Multiple regression is a more sophisticated extension of correlation and is used when you want to explore the predictive ability of a set of independent variables on one *continuous dependent measure*.
- *Different types of multiple* regression allow you to compare the predictive ability of particular independent variables and to find the best set of variables to predict a dependent variable.

Exploring Relationship when the data is categorical

- All of the analyses described above involve exploration of the relationship between continuous variables.
- If you have only categorical variables, you can use the Chi Square Test for Relatedness or Independence to explore their relationship (e.g. if you wanted to see whether gender influenced clients' dropout rates from a treatment program).
- In this situation, yon are interested in the number of people in each category (males and females who drop out of /complete the program) rather than their score on a scale.

e. Discriminant function analysis

- *It is used when you want to explore the* predictive ability of a set of independent variables, on one *categorical* dependent measure.
- That is, you want to know which variables best predict group membership.
- The dependent variable in this case is usually some clear criterion (passed/failed, dropped out of/continued with treatment).

f. Canonical correlation

- *It is used when you wish to analyse the relationship* between two *sets of variables.*
- *For example, a researcher might be interested* in how a variety of demographic variables relate to measures of wellbeing and adjustment.

g. Structural equation modelling

- *It is a relatively new, and quite sophisticated,* technique that allows you to test various models concerning the interrelationships among a set *of variables.*
- *Based on multiple regression and* factor analytic techniques, it allows you to evaluate the importance *of each of the independent variables in the model and to test the overall fit of the* model to your data.
- It also allows you to compare alternative models.

Exploring differences between groups

- There is another family of statistics that can be used when you want to find out whether there is a statistically significant difference among a number *of* groups.
- The parametric versions of these tests, which are suitable when you have interval-scaled data with normal distribution of scores, are presented below, along with the non-parametric alternative.

a. T-tests

- T-tests are used when you have *two groups (e.g. males and females) or two sets* of data (before and after), and you wish to compare the mean score on some continuous variable.
- There are two main types of t-tests.
- Paired sample t-tests (also called repeated measures) are used when you are interested in changes in scores for subjects tested at Time 1, and then again at Time 2 (often after some intervention or event).

- The samples are 'related' because they are the *same* people tested each time.
- Independent sample t-tests are used when you have two *different (independent) groups of people (males and females), and you are* interested in comparing their scores.
- In this case, you collect information on only one occasion, but from two different sets of people.

- The non-parametric alternatives, Mann-Whitney U Test and Wilcoxon Signed Rank Test.

b. One-way analysis of variance

- One-way analysis of variance is similar to a t-test, but is used when you have *two or more groups and you wish to compare their mean scores on* a continuous variable.
- It is called one-way because you are looking at the impact of only one independent variable on your dependent variable.
- A one-way analysis of variance (ANOVA) will let you know whether your groups differ, but it won't tell you where the significant difference is (gp 1/gp3, gp2/gp3 etc.).

- You can conduct post-hoc comparisons to find out which groups are significantly different from one another.
- You could also choose to test differences between specific groups, rather than comparing all the groups, by using planned comparisons.
- Similar to t-tests, there are two types of one-way ANOVAs: repeated measures ANOVA (same people on more than two occasions), and between-groups (or independent samples) ANOVA, where you are comparing the mean scores of two or more different groups of people.

- The nonparametric tests include Kruskal-Wallis Test and Friedman Test.

c. Two-way analysis of variance

- Two-way analysis of variance allows you to test the impact of two independent variables on one dependent variable. The advantage of using a two-way ANOVA is that it allows you to test for an interaction effect-that is, when the effect of one independent variable is influenced by another; for example, when you suspect that optimism increases with age, but only for males.

- It also tests for 'main effects'-that is, the overall effect of each independent variable (e.g. sex, age).
- There are two different two-way ANOVAs: between groups ANOVA (when the groups are different) and repeated measures ANOVA (when the same people are tested on more than one occasion).
- Some research designs combine both between-groups and repeated measures in the one study.
- These are referred to as 'Mixed Between-Within Designs', or 'Split Plot'.

d. Multivariate analysis of variance

- Multivariate analysis of variance (MANOVA) is used when you want to compare your groups on a number of different, but *related, dependent variables;* for example, comparing the effects of different treatments on a variety of outcome measures (e.g. anxiety, depression, physical symptoms).
- Multivariate ANOVA can be used with one-way, two-way and higher factorial designs involving one, two or more independent variables.

e. Analysis of covariance

- Analysis of covariance (ANCOVA) is used when you want to statistically control for the possible effects of an additional confounding variable (covariate).
- This is useful when you suspect that your groups differ on some variable that may influence the effect that your independent variables have on your dependent variable.
- To be sure that it is the independent variable that is doing the influencing, ANCOVA statistically removes the effect of the covariate.
- Analysis of covariance can be used as part of a one-way, two-way or multivariate design.

Summary of major statistical techniques

- Exploring relationships among variables

Chi-square for independence

- Example of research question: What is the relationship between gender and dropout rates from therapy?
- **What you need:**
  - one categorical independent variable (e.g. sex: males/ females); and
  - •one categorical dependent variable (e.g. dropout: Yes/No).
- You are interested in the *number of people in each category (not scores on* a scale).

Correlation

- Example of research question: Is there a relationship between age and optimism scores? Does optimism increase with age?
- **What you need**: two continuous variables (e.g., age, optimism scores)
- **Non-parametric alternative**: Spearman's Rank Order Correlation

Partial correlation

- **Example of research question**: After controlling for the effects of socially desirable responding, is there still a significant relationship between optimism and life satisfaction scores?
- **What you need**: Three continuous variables (e.g. optimism, life satisfaction, socially desirable responding)
- **Non-parametric alternative**: None.

- A *partial correlation quantifies the relationship between two variables while controlling for the effects of a third variable on*
- *both variables in the original correlation.*
- A *semi-partial correlation quantifies the relationship between two variables while controlling for the effects of a third variable* on only *one of the variables in the original correlation.*

Multiple regression

- **Example of research question**: How much of the variance in life satisfaction scores can be explained by the following set of variables: self-esteem, optimism and perceived control? Which of these variables is a better predictor of life satisfaction?
- **What you need**:
- • one continuous dependent variable (e.g. life satisfaction); and
- • two or more continuous independent variables (e.g. self-esteem, optimism, perceived control).
- **Non-parametric alternative**: None.

Exploring differences between groups

- ***Independent-samples t-test***
- **Example of research question**: Are males more optimistic than females?
- **What you need**:
- • one categorical independent variable with only *two groups (e.g. sex: males and* females);
- • one continuous dependent variable (e.g. optimism score).
- Subjects can belong to only *one group*.
- **Non-parametric alternative**: Mann-Whitney Test

Paired-samples t-test (repeated measures)

- Example of research qnestion: Does ten weeks of meditation training result in a decrease in participants' level of anxiety? Is there a change in anxiety levels from Time 1 (pre-intervention) to Time 2 (post-intervention)?
- **What you need:**
- • one categorical independent variable (e.g. Time *II Time 2); and*
- • one continuous dependent variable (e.g. anxiety score).
- *Same subjects tested on two separate occasions: Time 1 (before intervention)* and Time 2 (after intervention).
- Non-parametric alternative: Wilcoxon Signed-Rank Test

*One-way between-groups analysis **of variance***

- Example of research question: Is there a difference in optimism scores for people who are under 30, between 31-49 and 50 years and over?
- **What you need:**
- one categorical independent variable with two or more groups (e.g. age: under *30/31-49150+); and*
- one continuous dependent variable (e.g. optimism score).
- **Non-parametric alternative**: Kruskal-Wallis Test

Two-way between-groups analysis of variance

- Example of research question: What is the effect of age on optimism scores for males and females?
- **What do you need:**
- two categorical independent variables (e.g. sex: males/females; age group: under 30/31-49/50+); and
- one continuous dependent variable (e.g. optimism score).
- **Non-parametric alternative**: None.
- ***Note:*** *analysis of variance can also be extended to include three or more* independent variables (usually referred to as Factorial Analysis of Variance).

Mixed between-within analysis of variance

- Example of research question: Which intervention (maths skills/confidence building) is more effective in reducing participants' fear of statistics, measured across three periods (pre-intervention, post-intervention, three-month follow-up)?
- **What you need:**
- one between-groups independent variable (e.g. type of intervention);
- one within-groups independent variable (e.g. time 1, time 2, time 3); and
- one coutinuous dependent variable (e.g. scores on Fear of Stats test).

- Non-parametric alternative: None.

Multivariate analysis of variance

- Example of research question: Are males better adjusted than females in terms of their general physical and psychological health (in terms of anxiety and depression levels and perceived stress)?
- **What you need**:
- one categorical independent variable (e.g. sex: males/females); and
- two or more continuous dependent variables (e.g. anxiety, depression, perceived stress).

- Non-parametric alternative: None.
- *Note: multivariate analysis of variance can be used with one-way (one* independent variable), two-way (two independent variables) and higher-order factorial designs. Covariates can also be included.

Analysis of covariance

- Example of research question: Is there a significant difference in the Fear of
- Statistics test scores for participants in the maths skills group and the confidence building group, while controlling for their pre-test scores on this test?
- **What you need:**
- one categorical independent variable (e.g. type of intervention);
- one continuous dependent variable (e.g. Fear of Statistics scores at Time 2);
- And
- one or more continuous covariates (e.g. Fear of Statistics scores at Time 1).

- Non-parametric alternative: None.
- *Note: analysis of covariance can be used with one-way (one independent* variable), two-way (two independent variables) and higher-order factorial designs, and with multivariate designs (two or more dependent variables).

Chapter VIII

Reporting Research Findings

- Writing the report is the last, and for many, the most difficult step of the research process.
- The report informs the world what you have done, what you have discovered and what conclusions you have drawn from your findings.
- The report should be written in an academic style. Language should be formal and not journalistic.

Written Research Project Report Format

- Traditional written reports tend to be produced in the following format.

Title Page

- Title of the Research Project,
- Purpose of the research , e.g. "A thesis Submitted to the Department of Management, Faculty of Business and Economics, University of Gondar for the Award of Degree of Master in Business Administration (MBA)"
- Name of the researcher,
- Name of the Adviser/s
- Institutional Affiliation and Logo
- Date of Publication
- Place of Publication

DECLARATION

I hereby declare that this thesis entitled "**Employees' Perception Towards Organizational Climate** (with particular reference to Debremarkos University)" submitted by me for the award of the degree of **Master** in Business Administration, is an original work carried out by me and it has not been submitted previously in part or full to this or to any other University for the award of any Degree or Diploma or Prize.

Date_____ (Abebe Kebede)

Debremarkos

CERTIFICATE

- This is to certify that that this thesis entitled "**Employees' Perception Towards Organizational Climate** (with particular reference to Debremarkos University)" submitted to Department of Management, Faculty of Business and Economics, debremarkos University, Debremarkos for the award of the Degree of **Master of Business Administration (MBA)** is a piece of bonafide research work carried out by Abebe Kebede under my guidance and supervision.

- Date_____Asmamaw Geremew [PhD] _____
  - Debremarkos

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1. Pie Chart showing age distribution of respondents
2. Bar Graph showing popularity of menu items

Acknowledgements

- Here the researcher may acknowledge Institute Principal, Faculty Guide-both research guide and technical guide, research participants, friends etc.

Chapter I

Introduction

- This section introduces the research setting out aims and objectives.
- It includes a rationale for the research.
- All sub elements as indicated on the proposal writing format shall be included.

Chapter II

Review of Literature

- In this section is included all reviews of theories, concepts and empirical studies.
- You must indicate from where all the information has come, so remember to keep a complete record of everything you read.
- If you do not do this, you could be accused of *plagiarism which is a form of intellectual theft*.
- *When* you are referring to a particular book or journal article, use the APA system.

Chapter III

Methodology

- This section includes all practical details followed for research .
- After reading this, any interested party should be able to replicate the research study.
- The methods used for data collection, how many people took part, how they were chosen, what tool was used for data collection, how the data was analysed etc.

Chapter IV

Data Analysis and Interpretation

- If you have conducted a large quantitative survey, this section may contain tables, graphs, pie charts and associated statistics. If you have conducted a qualitative piece of research this section may be descriptive prose.

Chapter V

Summary, Conclusion, Recommendations and Suggestion for Further Research

- In this section you sum up your findings and draw conclusions from them, perhaps in relation to other research or literature.
- If you have conducted a piece of research for a hotel or any other client organization, this section could be the most important part of the report.
- A list of clear recommendations which have been developed from the research is included- sometimes this section is included at the beginning of the report.

- It is useful in both academic reports and work-related reports to include a section which shows how the research can be continued.
- Perhaps some results are inconclusive, or perhaps the research has thrown up many more research questions which need to be addressed.
- It is useful to include this section because it shows that you are aware of the wider picture and that you are not trying to cover up something which you feel may be lacking in your own work.

List of References /Bibliography

- *List of references contains details only of those works cited in the text.*
- *A bibliography includes sources not cited in the text but which are relevant to the subject.(larger dissertations or thesis)*
- Small research projects will need only a reference section. This includes all the literature to which you have referred in your report.
- The popular referencing system *APA System must be followed.*