



# What is RESEARCH?

**Research in common word refers to a search for knowledge.**

**It can be also defined as a scientific and systematic search for *relevant* information on a specific topic.**

# OBJECTIVES OF RESEARCH

\*To discover answers to questions through the application of scientific procedures.

\*To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as diagnostic research studies).

\*To test a hypothesis of a causal relationship between variables (such studies are known as hypothesis-testing research studies).

**A research problem is a specific question, problem, or difficulty that needs to be investigated or analysed.**

**Some of the characteristics of a good research problem are:**

- 1. A good research problem should be specific. The variables are clearly stated, and the relationship are properly cited.**
- 2. It should be measurable. It can be measured accurately by research instruments.**
- 3. It is achievable. The data are achievable using correct statistical techniques to come up with reliable findings.**
- 4. It is realistic. The result are empirical and not manipulated. The researcher respects and upholds the integrity of the evidence.**
- 5. It is time-bound. Time frame is essential to realize or complete the study at a set time and budget.**
- 6. It is new; it is not already answered sufficiently.**

## **Example of Problem Statement in Research Proposal**

If, for example, you intended to research the effect of vitamin D supplementation on the immune system, you would begin with a review of the current knowledge of vitamin D's known function in relation to the immune system and how a deficiency of it impacts a person's defenses.

You would describe the ideal environment in the body when there is a sufficient level of vitamin D. Then, begin to identify the problems associated with vitamin D deficiency and the difficulty of raising the level through supplementation, along with the consequences of that deficiency. Here you are beginning to identify the problem of a common deficiency and the current difficulty of increasing the level of vitamin D in the blood.

**“Here is a cheat sheet to help you with formulating a good problem statement.**

1. **Begin with** a clear indication that the problem statement is going to be discussed next. You can start with a generic sentence like, “The problem that this study addresses...” This will inform your readers of what to expect next.

2. **Next, mention the consequences of not solving the problem.** You can touch upon who is or will be affected if the problem continues, and how.

3. **Conclude with indicating the type of research/information that is needed to solve the problem.** Be sure to reference authors who may have suggested the necessity of such research.

This will then directly lead to your proposed research objective and workplan and how that is **expected to solve the problem i.e., close the research gap.**”

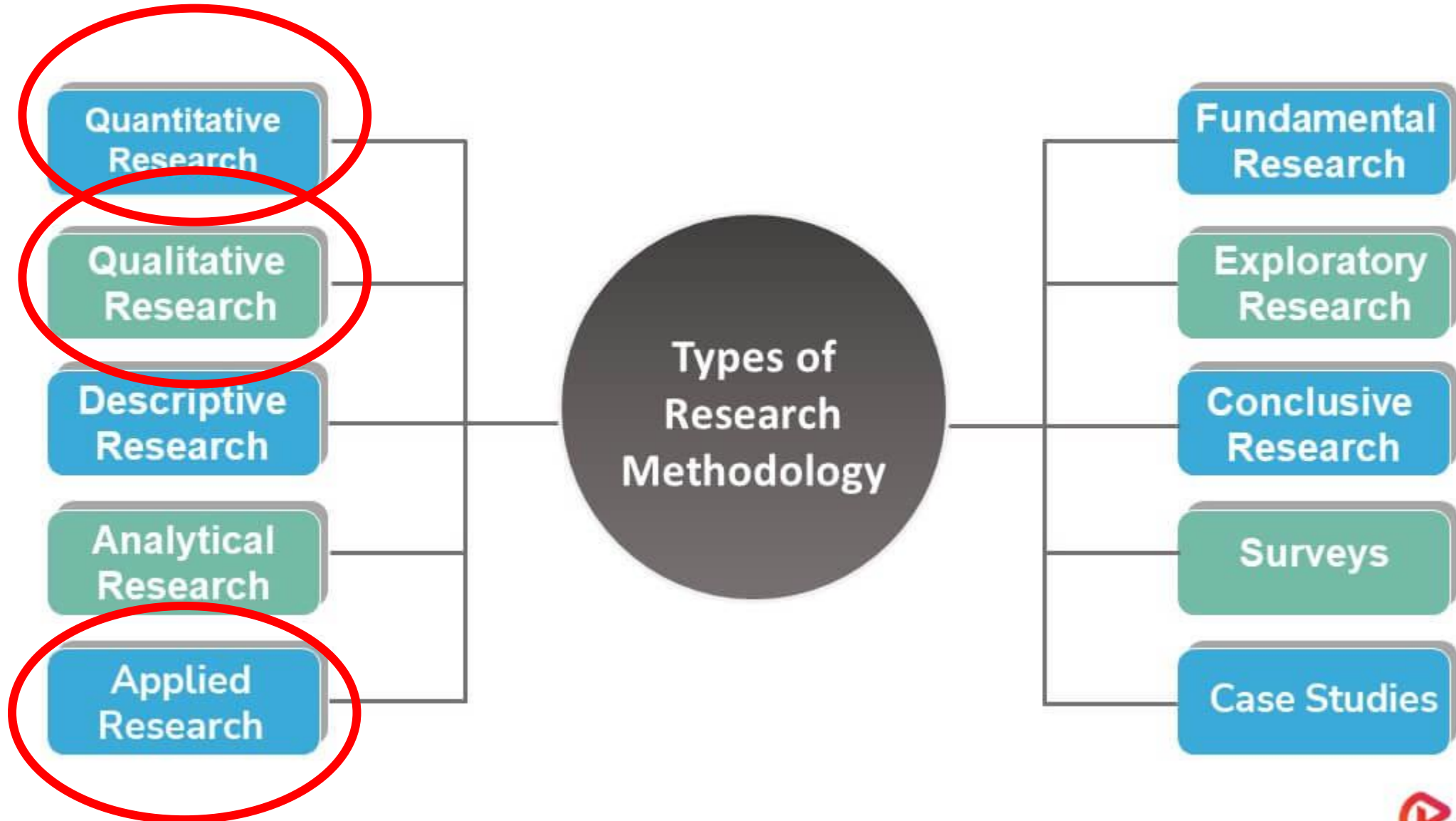
Reference: <https://scientific-publishing.webshop.elsevier.com/research-process/what-problem-statement-examples/>

## *Research Methods* versus *Methodology*

*Research methods* may be understood as all those methods/techniques that are used for conduction of research.

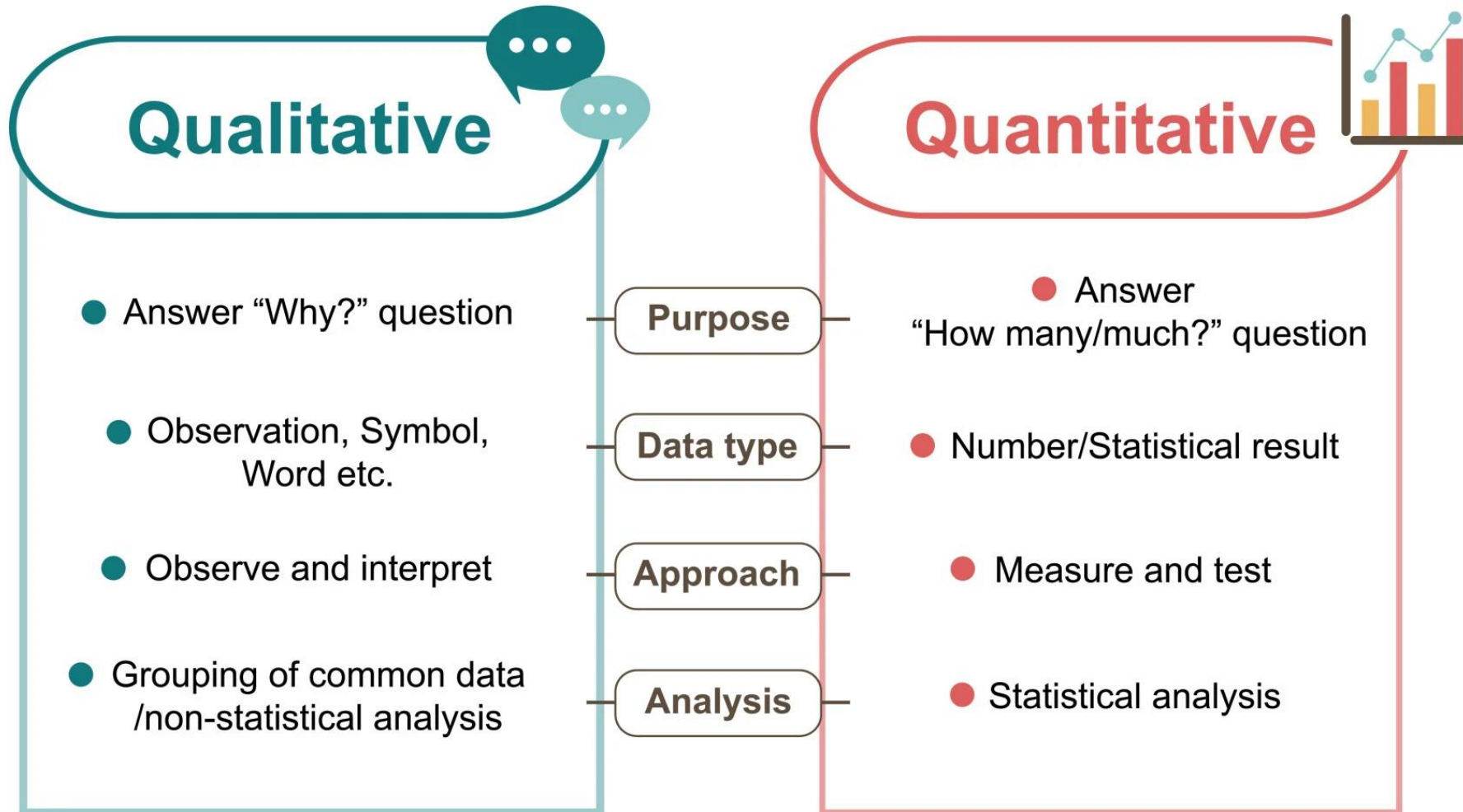
*Research methodology* is a way to systematically solve the research problem. It is necessary for the researcher to know not only the research methods/techniques but also the methodology.

# Types of Research Methodology





# Type of research design



# Product Development

## Qualitative Research



- ✓ Explore
- ✓ Go Deep
- ✓ Seek to Understand

## Quantitative Research



- ✓ Quantify
- ✓ Validate
- ✓ Make Decisions

# Research Process

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graph LR; A[Choosing a research topic] --> B[Constructing aims or hypotheses]; B --> C[Selecting methods]; C --> D[Collecting data]; D --> E[Analysing data]; E --> F[Interpreting data and drawing conclusions];
```

Choosing a research topic

Constructing aims or hypotheses

Selecting methods

Collecting data

Analysing data

Interpreting data and drawing conclusions

# Experimental Designs

**Experimental design refers to the framework of protocols and procedures created to conduct experimental research with a scientific approach using two sets of variables.**

## Types of Experimental Research Designs

- **One-shot Case Study Research Design.**
- **One-group Pretest-post test Research Design.**
- **Static-group Comparison.**

### Present Findings

Development of the presentation of results (findings) of the research.

### Data Collection

Deciding when and how often to collect data.

### Data Analysis Plan

Establish the approach to analysis of data.

### Measures for Variables

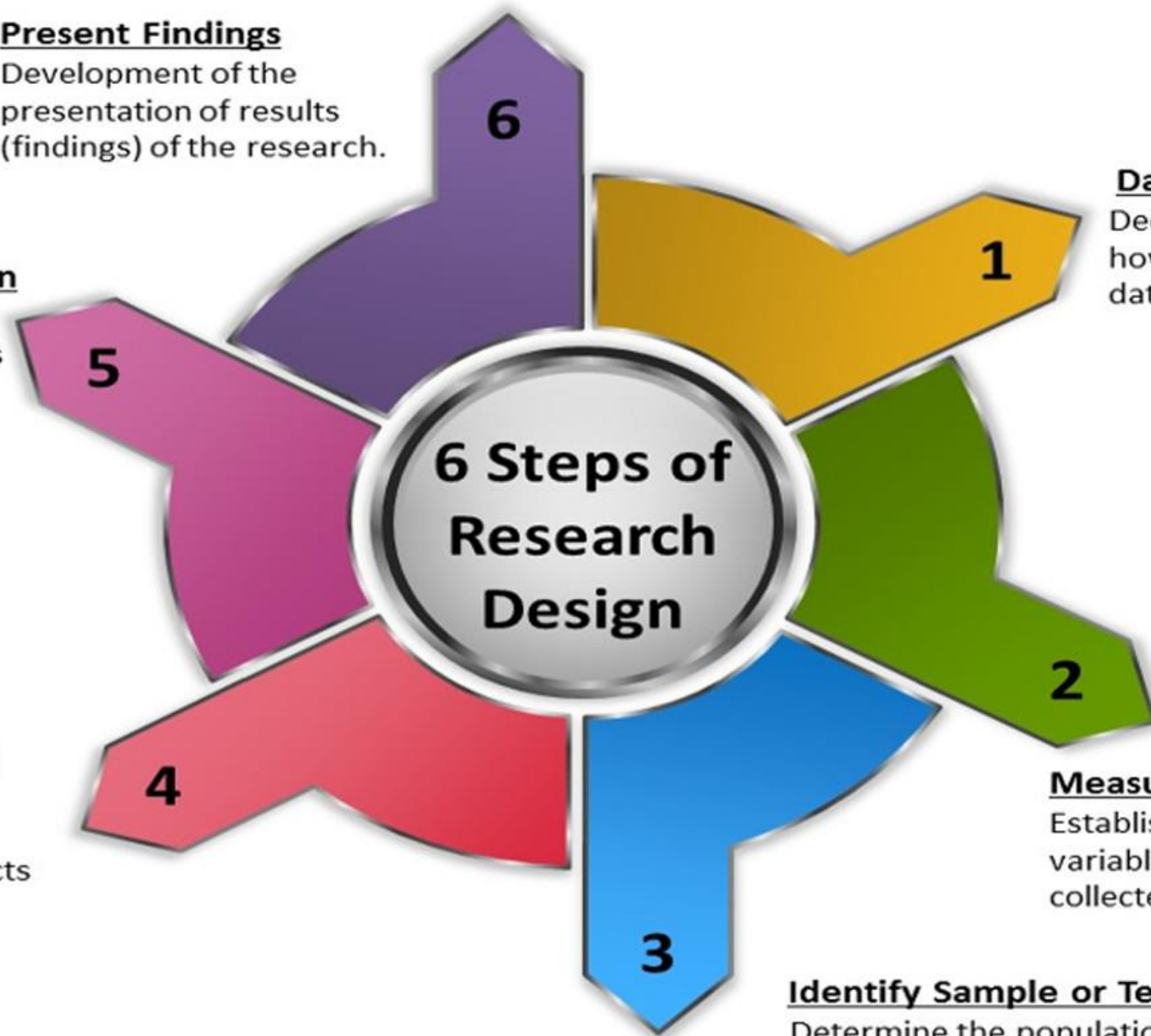
Establish measures for each variable for which data will be collected.

### Contact Subjects

Determine the approach to make contact with subjects

### Identify Sample or Test Population

Determine the population of interest and the appropriate sample



# Measurement



## in Research

The process of assigning numbers to objects or observations,





# Methods of Data Collection

A- mechanical devices

B-projective techniques



## PROCESSING AND ANALYSIS OF DATA



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The data, after collection, has to be processed and analysed in accordance with the outline laid down for the purpose at the time of developing the research plan.

1-Assembling

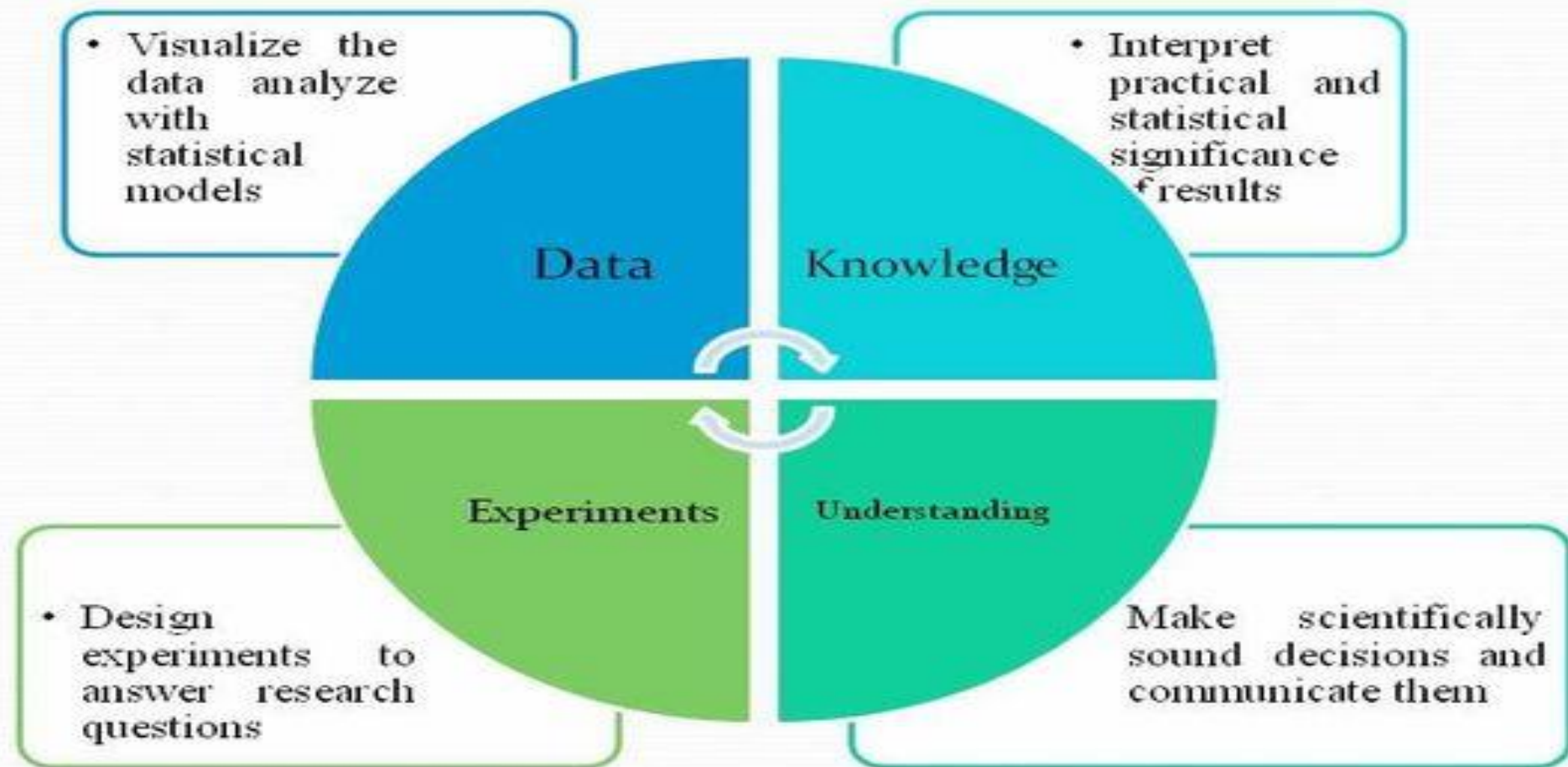
2- Editing

3-Tabulation ( in the form of statistical tables)

\*Tabulation can be done by hand or by mechanical or electronic devices.

The choice depends on the size and type of study, cost considerations, time pressures and the availability of tabulating machines or computers.

# Role of statistics in Research



# The role of Computer in Research



\*The development of electronic devices, specially the computers, has given added impetus to this activity.

\*Problems which could not be solved earlier due to sheer amount of computations involved can now be tackled with the aid of computers accurately and rapidly.

\*Computer is certainly one of the most versatile and ingenious developments of the modern technological age. Today people use computers in almost every walk of life.

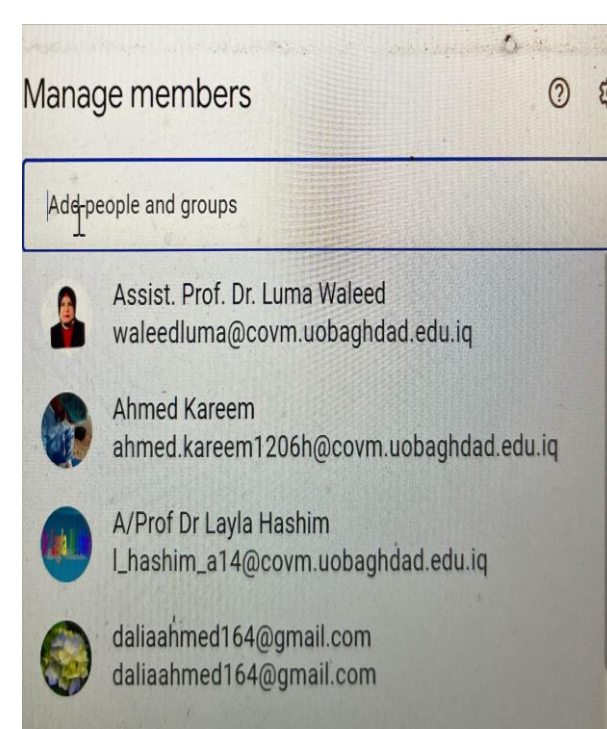
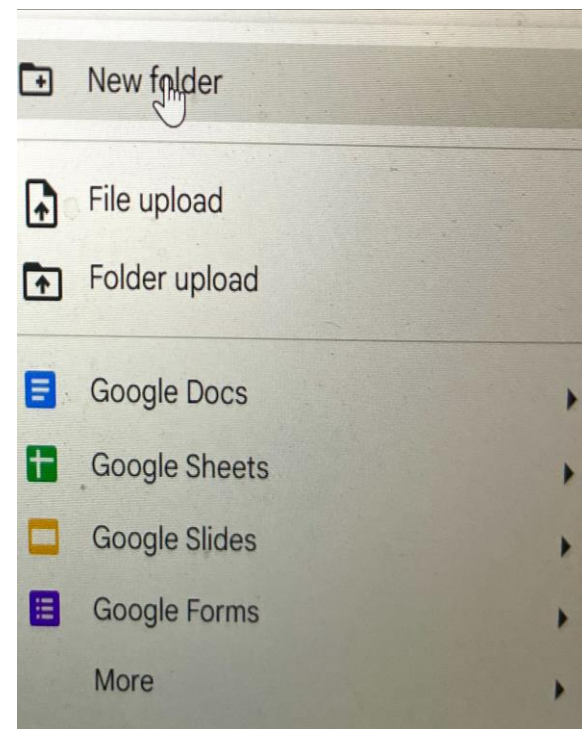
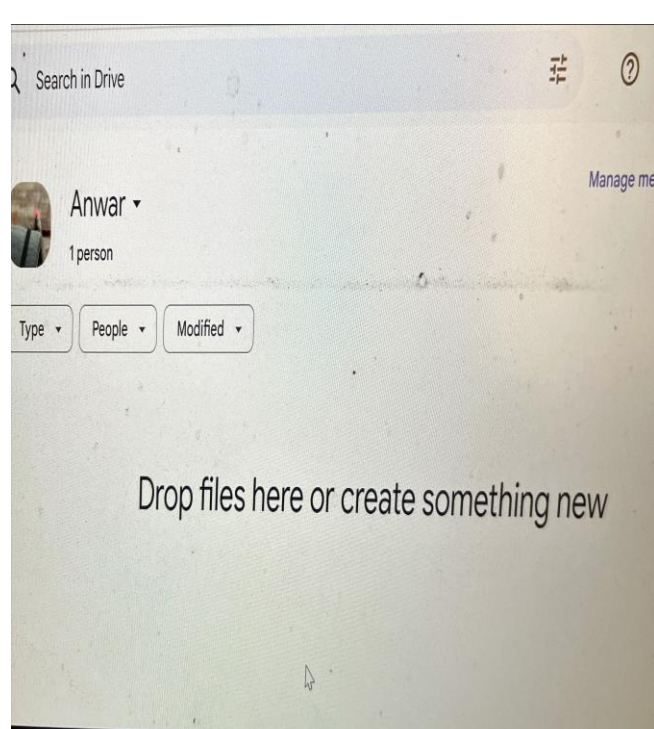
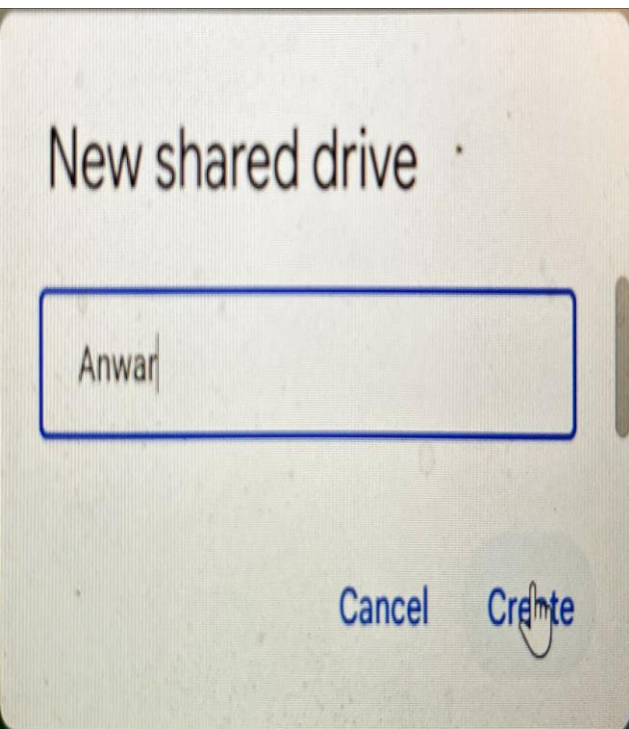
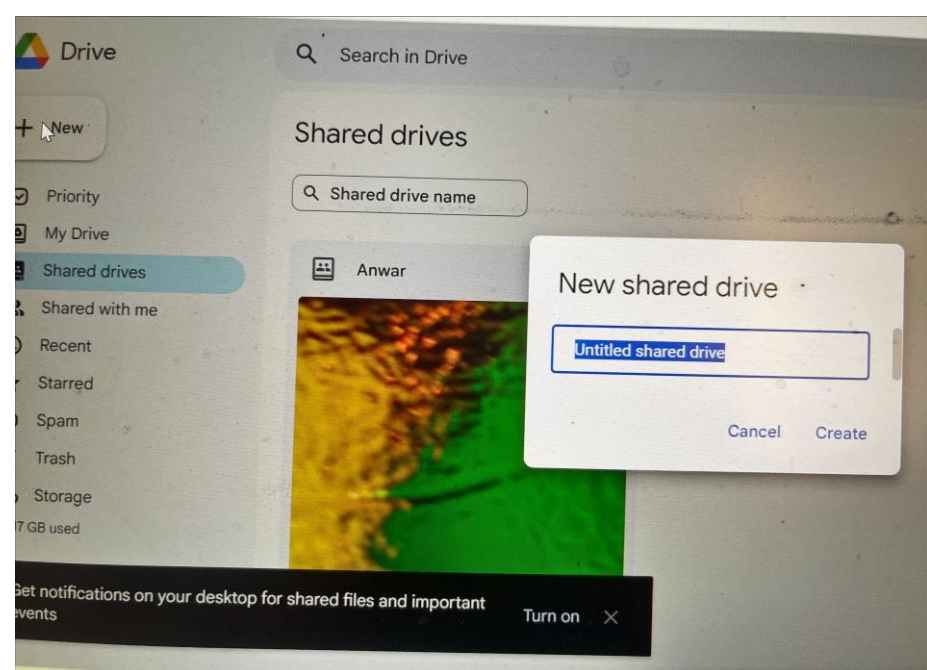
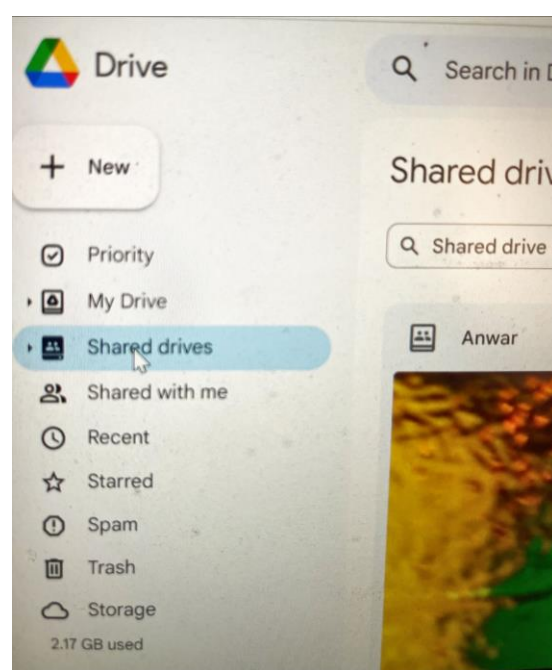
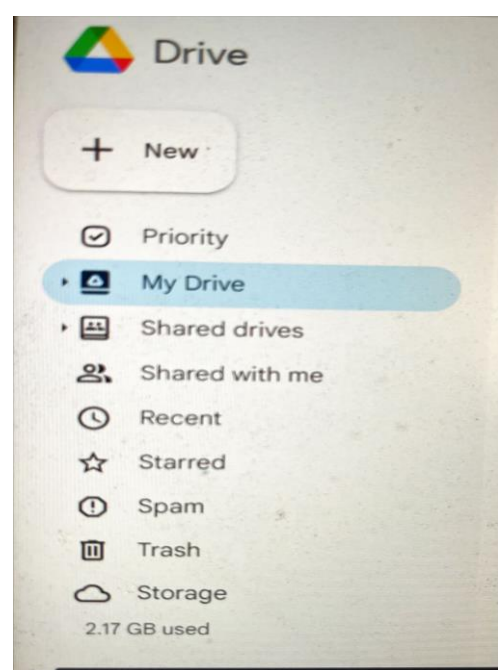
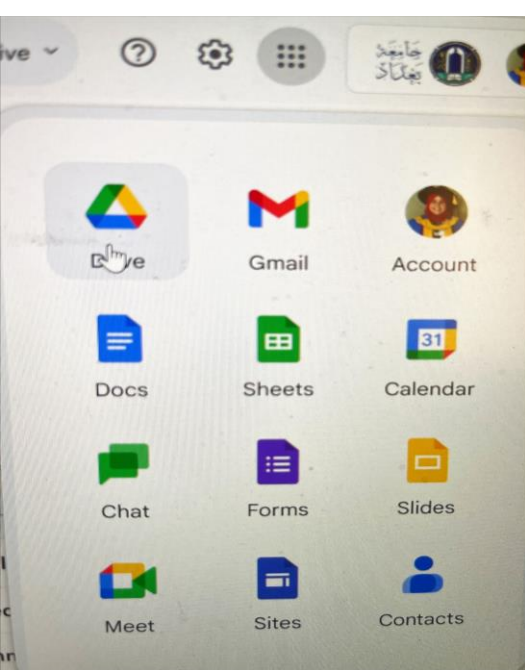
\*To the researcher, the use of computer to analyze complex data has made complicated research designs practical.

## A guide to Google Shared Drive



1. On your computer, go to [drive.google.com](https://drive.google.com).
2. On the left, click Shared drives.
3. At the top left, click New.
4. Enter a name for the shared drive.
5. Click Create.







THANKS  
for listening