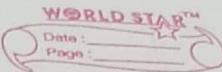


28/06/23

9313050129  
↑  
912235510535



Evaluation :- [100 Marks]

Internal - 60 Marks [20 marks each]

- Assignment - written or grp assignment
- Class Test
- Mini Project or quiz

July - one assessment

September - 2 assessment.

External - 40 Marks - Theory and Casestudies

CR Kothari - Research Methodology

MK Malhotra - Market Research

30/06/23



★ UNIT 1 :- INTRODUCTION TO RESEARCH :-

- Research is → Systematic process
- Scientific in nature.
- Has new knowledge :- conduct literature review
- In order to know whether ~~researches~~ research is already done or not by books, newspaper

★ Reasons to conduct Research :-

- To understand the field you are working in.
- To extend and find ~~new~~ answers to ~~perce~~ <sup>perceive</sup> ~~for~~ goods (perception)
- To critically examine critical experiments.
- To make changes (to suggest changes to govt. for ~~go~~ study related)
- To find answer you need theoretical reasons

## \* Characteristics for Conducting Research Process

- Collecting
- Analyzing
- Interpretation of data

- For every kind of research you have to collect the data
- Analyzing refers to statistic, taking test, mean median mode,
- After analyzing, Interpretation of data to compare to your expected results.

### ① Controlled

- Show result & the result conducted with outcomes

### ② ~~Reproducible~~ Rigorous :-

- Procedures should be logical, to follow steps.

### ③ Systematic

These should be steps to follow

Verifiable

### ④ Valid & Verifiable :-

Everytime you use tool on result, the result should not change. can be verified by others

### ⑤ Empirical :- Quantitative (numeric form), Qualitative (img, video, text)

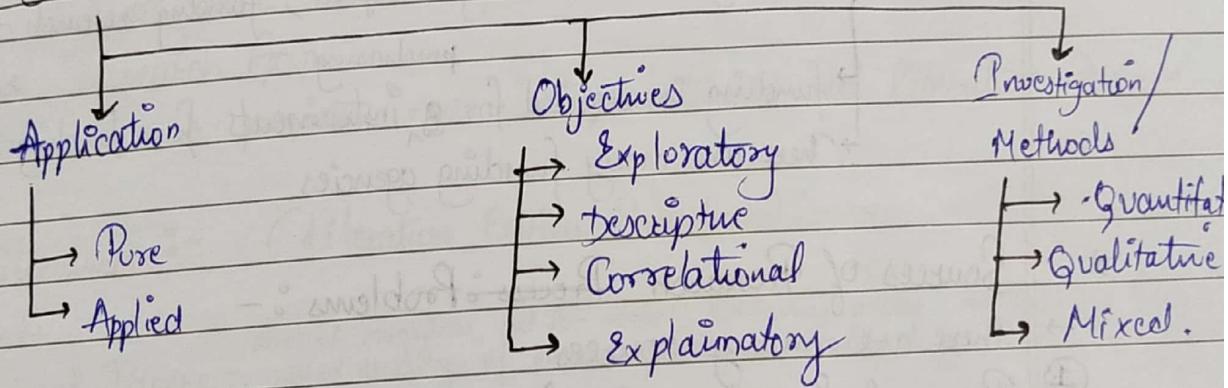
data.

### ⑥ Critical :- State of the method, finding and conclusion of the research

### ⑦ Purposive :- research must be conducted ~~with~~ with a certain and definite aim.

- \* Types of Research :-
- Classifying research in many ways :-
- ① Application → Pure Research  
→ Applied Research
  - ② Objective → Exploratory  
→ Descriptive  
→ Correlational  
→ Explanatory
  - ③ Investigation → Quantitative  
→ Qualitative  
→ Mixed

5 July | 23 Types of Research



- No.
- ① Inductive : Theory  $\rightarrow$  Data
  - ② Deductive : - Theory  $\rightarrow$  Proving the data

\* Process of Research [3 Phases (8 steps)]:

- ① Phase 1 : Deciding what to do?
- ② Phase 2 : Planning
- ③ Phase 3 : - Conducting (Implementation)

Phase 1 : Deciding what to do?

In this phase we are deciding the objectives or research questions  
Based

Phase 2 : Planning :-

Conceptualizing research Design

Constructing instrument of Data collection

Collecting the sample - [sampling techniques for collecting sample]

Writing research proposal - [writing research methodology about all process made above]

Phase 3 :- Conducting (Implementing)

Data Collection - collecting data from collected sample & analyse it

Data Analysis - and analysis the data taken from sample.

Report - collecting data & forming a report ; funding research - type of research

 purchasing funding is required for instruments from funding agencies.

 There are many funding agencies.

Sources of Research Process Problems :-

There are many sources

Personal Experience :- from your personal experience you decide to take the research

 Eg :- Teachers observe a decrement in students learning ability

Practical Experiences

Critical Appraisal of literature

Previous Research :- ~~research~~ already done in another country can be done for India

Existing Theories :- If you disagree ; then prove your point using research

Consumer Feedback

Performance Improvement Research Activity

Social Issues

Brainstorming

- (10) Intusion Based Study
- (11) Exposure to the field Situation
- (12) Consultations from experts

7/7/23

## UNIT 2 - LITERATURE REVIEW :-

### \* What is Literature Review :-

- The methods to know what research has been done
- Helps to you to identify the gap (research gap)
- To know about the research ; read news ; etc & if there is a point or some research that is missing , that is known as Research Gap.
- It provides new interpretation of old literature review.

### \* Literatures :- (Literature Review Procedures) :-

- Books
- Journal Papers - sort of magazines ; call for papers ; reviewing papers ; selecting from highest quality of papers ; quality is identified by Journal Indexing.
- Conference Proceedings
- Book Chapters
- Reports
- White Papers , etc

### \* Journal Papers :-

- Database :- Scopus ; Web of Science ; ABDC ; Ebsco ; etc.

- Blind Reviewed :- Harvard Business Review (HBR)

Journal should be related to business for HBR

- visit website ; check main & goals ;
- Project are sent to reviewee ; who are unknown to each other.
- The reviewees review & then only they accept they might generate feedbacks ; for good quality of Journal.

\* Conference Proceedings :-

- Conferences are based on Latest Topic.
- There are many papers that are selected and they are reviewed & presented to reviewers & audiences
- Conference Proceedings should be included into Journal Papers

\* Reports :-

- Reports means research conducted to represent in the form of Research;

\* White Papers :-

- Whenever Research is conducted by Businesses / organization, they have research finding for products that their company launch.

\* Working with Literature :-

① Find it :-

- Know the literature type
- Using available resources
- Search Skills [as good as google for results]

② Manage :-

- Reading efficiently [Abstract - summary of paper]
- Keep track
- Notes

③ Use it → Choosing your research topic

- Develop research questions & objectives
- Relate your work with theory
- Rationale
- Methods

- ④ Review it → Purpose?
- Ensuring adequate Coverage.
  - Writing purposefully
  - Working on Style and tone

12/July/23

### \* Type of Literature Review

#### ① Systematic Literature Review :- [SLR]

- We don't follow procedure or method
- Eg - Digital Marketing Research
  - ↳ straightforward starting search stream using google
- Not a Systematic way of Literature Review

#### \* Steps of SLR :-

- Explanation*
- { you should have Research Question or Objectives
  - ↳ Qualitative in Nature
  - Transparent search in Database
  - Search might have duplicate Research on various websites.
  - Outcome should fill missing gaps in Research

#### \* The Actual 5 steps of Systematic Literature Review

##### ① Step 1 - Formulating the Research (SLR) questions

##### ② Step 2 - Search Strategy

How? (Searching Research paper related to the topic)

Search stream for database

- ① Create a Search Strategy [Digital Marketing + Small Business \* OR Enterprises]

##### ② Selection of Databases to Search

##### Step ③ Assessing the Quality of the search result through

- ↳ (a) Inclusion Exclusion Criteria → Other than English Language

- ↳ (b) Inclusion Criteria → Books, chapters, Journals, Conferences,

→ Studies focussed on Digital Marketing for small businesses.

## Step 4:- Summarizing (Data Analysis) - Qualitative.

(going through abstracts, generating key points, using Inductive thematic Analysis)

## Step 5 - Reporting of the findings :-

- themes and Sub-themes
- frameworks - variables & interconnection, pictorial representation)
- Research Gap (Emerging areas)

### ② Theoretical Review :-

- Considering a theory and doing Analysis
- 

### ③ Bibliometric Analysis Review (Quantitative)

- Excel Sheet → Year, Page No, Vol, Paper, Title, Journal & Name, key words, Citation
- Multiple fields important
- Quantitative in Nature
- Vosviewer → software taking <sup>excel sheet</sup> as input
- Citation → any paper that is published.
- Copy & Paste will be considered as Plagiarism

### \* Mistakes while writing Literature Review

- Don't write definitions
- Critically accept other resources
- Search stream should be defined

## UNIT 3-

14 July 23

5 steps for systematic literature review :-  
[Includes 30-40 pages]

Chronological order

- ① Abstract should be written at last
- ② first, Introduction to [topic name]
- ③ There should not have any literature review done at past

5 years

④ Important questions that can be asked :- [Common]

→ ① what is the present status of research in [topic name].

→ ② etc

→ ③ etc

⑤ Representation of Research methodology process in pictorial form.

How to search in Database :-

database search - SCOPUS

enter search string

digital marketing AND (Business \* OR enterprise)

CSV	Export
Citation information	

## Research Methodology Process :-

Questions

Search → string & database

Inclusions / Exclusions

Data analysis - draw graphs, framework emerged.

Interpretation

Institutional

Distribution framework.

Add references at last with citation

its

↳ in-text citation & ~~the~~ references

only authors' last name is considered; not even first name & initials are not included. Surname & year

"Jadhav 2023"

## Literature Review Project discussion :-

### Unit 3 :- Theoretical Framework and Hypothesis formulation

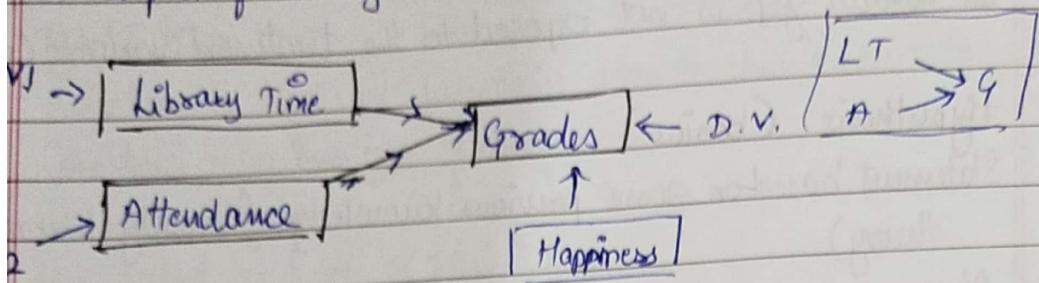
#### Dependent and Independent variable :-

Independent Variables are one or more variables specifically intended to manipulate the score on the dependent variable. The variables are generally known as :-

- Stimulus
- Treatment
- Experimental

Eg :- Independent Variable <sup>(a)</sup> Time spent in the library (variable)  
<sup>(b)</sup> Attendance of student in lecture (variable)

- Dependent Variable  $\leftarrow$  Grades (Variable) [Make sure about  
Impact of 'Library Time' on 'Grades' the arrows]



Grades may affect the mental health. (Independent variable when it comes to happiness) & Happiness is D.V.  
If its Library time & Attendance then Grades are D.V.

Continuous and Discrete Variables :-

Quantitative values even in decimal points are continuous variables.  
Age  $\Rightarrow$  3.5 years.

Variables which take only integer value are discrete variables.

No. of children  $\Rightarrow$  3

Extraneous Variables :- Independent variables that are not related to the purpose of the study, but may affect the dependent variable.

Pretest and Posttest :-

Pretest is measurement of variable prior to introducing the treatment variable.

Posttest is

(5) Experimental & Control Groups :-

- Experimental grp is exposed to the treatment variable(s).
- Control grp is not exposed to the treatment variable(s).

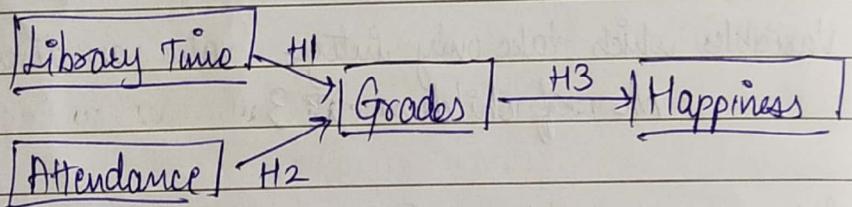
\* Hypothesis (basics)

- Statement based on some previous knowledge (Usually literature or theory)
- Always proposed in the beginning of the study / research.
- To be tested in the study through data
- Is accepted or rejected.

Hypothesis :-

H<sub>1</sub> - Time spent in library significantly affects the grades of student.

H<sub>2</sub> - Attendance in lectures significantly affects the grades of student.



H<sub>3</sub> : The grades of student significantly affects the happiness of student.

28/July/23 Hypothesis [Nice ! you wrote it twice] (-\_-)

→ Statement based on previous knowledge (Usually literature or theory)

- Always proposed in beginning of the study / research.
- To be tested in the study through data.
- Is accepted or rejected

Type I and II Errors :-

Type I Error :-

Type I Error :-  
Rejecting a true null hypothesis when it should NOT be rejected.

Considered a serious type of error

The probability of Type I Error is a. also called as level of significance.

Type II Error:-

## ~~Casestudy~~ → "Brilliant Coaching"

Identify the variables :

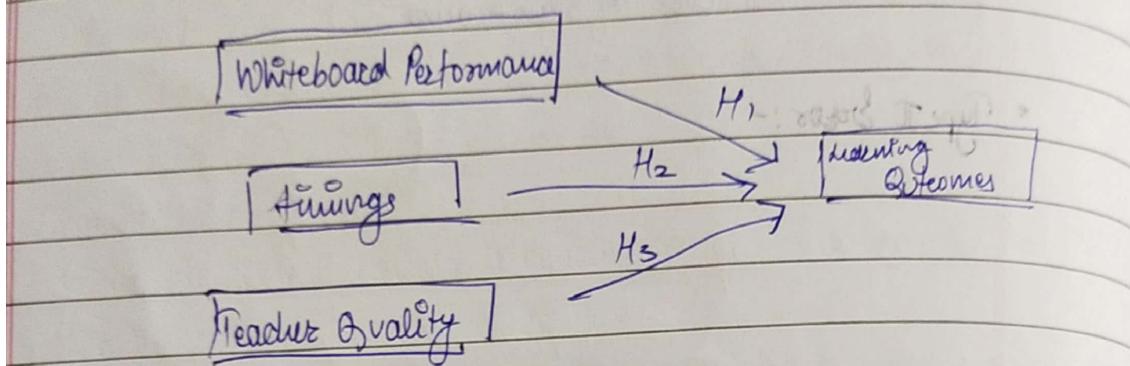
"Brilliant Coaching" has adopted a new interactive whiteboard method of teaching - learning. They want to know about its performance on learning outcomes of the student. Also they want to analyse the impact of other factors such as timings, teachers etc. on the learning outcomes of the students. You have to :-

Identify the variables:-

Establish dependent & independent variable

Design the concept /

- performance, learning outcomes, timing, teacher  
 Dependent Variable - learning outcomes  
 Independent Variable - whiteboard performance, timings, Teacher Quality  
 performance.  
 whiteboard, ~~impact~~ significantly the ~~student~~ learning impacts of  
 student



$H_{10}$  is null :- whiteboard performance significantly impacts the learning outcomes.

" $H_{1A}$   $\Rightarrow$  whiteboard performance ~~not~~ significantly does not impact the learning outcomes"

$H_{20} \Rightarrow$  Timings significantly ~~not~~ impacts the learning outcomes.

$H_{2A} \Rightarrow$  Timings significantly does not ~~not~~ impact the learning outcomes.

[same for  $H_{30}$  &  $H_{3A}$  for Teacher Quality]

2 Aug/23

## UNIT - 4 - Research Design

- Types of Research design
- Instrument design, Scale formation
- Sampling Design etc.
- Data Collection methods

- Validity test of ~~test~~ data

- Reliability test of Instrument

\* Types of Research Design :-

\* What is Research Design :-

- Blueprint for the collection, measurement, and analysis of data.
- Refers to overall strategy that one choose to integrate the different components of the study in a coherent & logical way.
- To ensure the research is address properly.

\* RM must contain :-

- Clear statement of Research problem
- Procedures & Techniques to be used for gathering

w/w

\* Degree of Problem Definition

- ① Exploratory Research - unaware of the problem
- ② Descriptive Research - aware of the problem
- ③ Causal Research - Problem Clearly defined

\* Exploratory Research :-

→ Data Collection Methods

- | ① Primary Data - Researchers collecting data for their own research.
- | ② Secondary Data - This is the data not collected by researchers; just collecting data & doing research.

→ focus group discussions

→ Interviews → Experience Survey ; Secondary data

→ Pilot Studies

by interviews, survey

↑

### \* Descriptive Research :-

- Describes characteristics of a population
- Statistical in nature; numeric
- DRD uses range of both qualitative & quantitative data to gather info. to ~~to~~ make accurate predictions about a particular problem

### \* Causal Research :-

- We have seen eg; Pe; if one thing is gaining; then the other should also gain; (Simple words; saath saath chalo)

### \* Deductive Reasoning :-

- Logical process of deriving a conclusion from a known premise or something known to be true.
- Testing a known theory
- Theory → hypothesis → Observation → Confirmation

### \* Inductive Reasoning :-

- Bottom up approach.
- Logical process of establishing a general proposition on the basis of observation of particular facts.

### \* Experimental Research :-

- Usual Study Program  
(control grp)

Grp is exposed to usual condition

Special Study Group  
(experimental Grp)

Grp is exposed to special condition

- Eg bill boards

- These experiments are done on people; at which part people get attracted more.

- Experiments are carried out to support, refute or validate a hypothesis.
- Research investigation in which conditions are controlled.

\* Qualitative Research Design :-

- Ground theory
  - Field research
  - Narratives
  - R programming ; Data mining uses the same method.
- Sentimental, Text, Image, Thematic, Content analysis.

\* Data, Variable, Constant

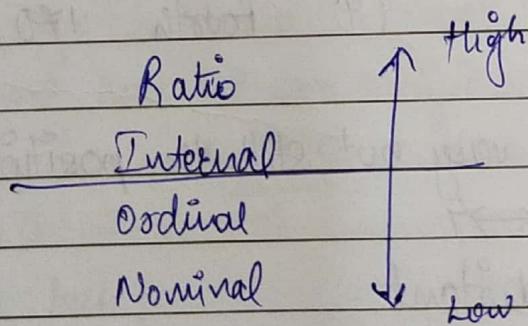
- Structured vs unstructured data (text, video, song, pictures)
- Quantitative & Qualitative data.
- Meta data ; Big data

11/Aug/23

## VARIABLE

Data Scales → used to capture quantitative data

- |  |   |
|--|---|
| ① Nominal<br>② Ordinal<br>③ Rating (Interval) Scale<br>④ Ratio Scale | ] lower level scales<br>] higher level scales . |
|--|---|



### ③ Internal Scale / Rating Scale

↳ Openheimer Movie

1 2 3 4 5 6 + 7 8 9 10

Ratings

Poor

Excellent

→ Another Scale → Likert's Scale [5-point Scale]

↳ Representation ↳

5	4	3	2	1
Strongly Agree	Agree	Neither agree or disagree	Disagree	Strongly disagree

Used to determine emotions

Use mean, frequency, co-relation, Regression

Many statistical tools can be used →

### ④ Ratio Scale → Strongest and the highest level of data

↳ ① Highest level of data

② Absolute Zero

③ All statistical tools can be used.

→ Eg → Age, Marks obtained, Temperature,

here we can assign specific values

Age → 0 ; Marks → 90 ; temperature 100 °C

this has a

meaning: baby

→ Can apply all the statistical tools for quantitative data

- ① Nominal Scale :- → Name Sake  
 → Used to represent Categories  
 → Number is only used to identify categories.
- Eg 1:- Gender ⇒ Male 1,  
 Female 2,  
 Other 3 } numbers are defined categories

Eg 2 → status ⇒ Married 1.  
 Unmarried 2.      Eg 3 → Yes 1.  
 No. 2,

→ The numbers are not actual numbers, they are just used to categorise the values.

They don't have proper meaning.

- ② Ordinal Scale :- Used to represent order

→ ~~Also~~ is a ranking Scale

Eg → Student Position in class → Position Marks

- ① first 350/400
- ② Second 345/400
- ③ Third 200/400
- ④ fourth 170/400

The difference may vary but still the position is fixed

$1 \leftrightarrow 2 \leftrightarrow 3 \leftrightarrow 4$

Not equidistant

- \* Tools we can use → Logical operators → ' $>$ ', ' $<$ ', ' $=$ '  
 Chi Square

⇒

→ for qualitative data can be, video, audio, There are different methods to analyse ~~then~~ it.

★ Sampling :-

→ Population / Universe

→ Sample or Census

→ Sample Size

→ Sampling frame

→ Sampling techniques

→ Sampling means representing something

→ Rather than collecting data each one of 30 students, you pick 5-10 students and survey them, for their response, views.

→ CR → Representing class & having conversation with principle rather than talking to every 30 students.

6/Aug/2023

\* Sampling Design and Procedures and Sample size determination

Population / Universe



Target population



Sample



Census

Population →

Define the population



← target population

Determining the Sampling frames



Select Sampling Techniques



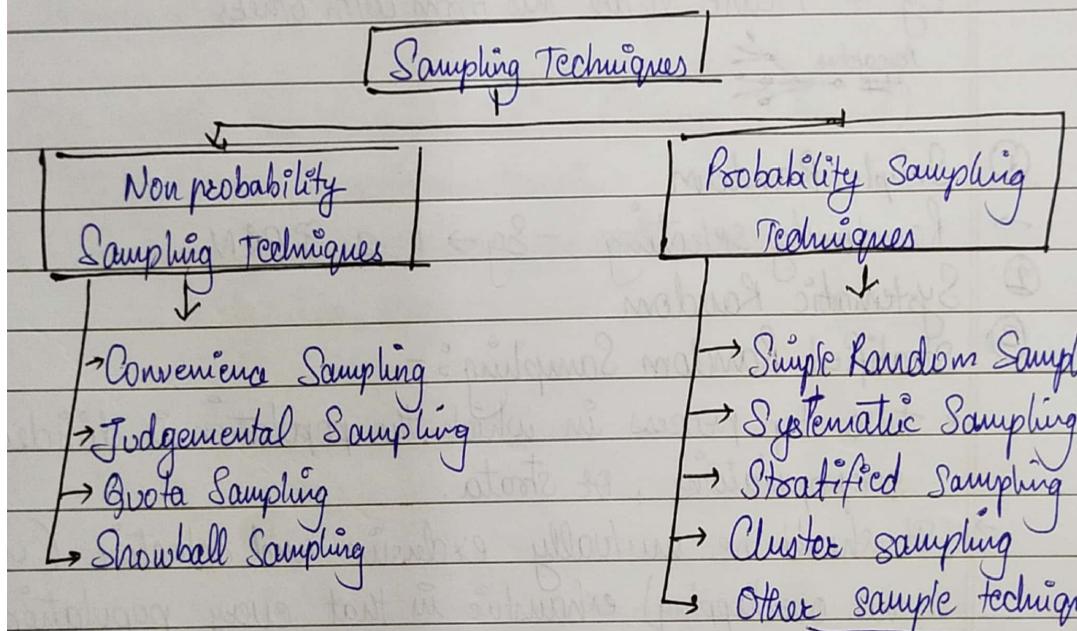
Determine Sample Size

← Collect data



Execute the Sampling process

## Classification of Sampling Techniques



Convenience Sampling :-

- Collecting data as per convenience
- No probability.
- Eg :- Reviewing teacher's experience of teaching only for regular students.
  - People on the street interviews
  - Mail intercept interviews without qualifying the respondent

means combinations of these techniques.

- definition → Attempts to obtain a sample of convenient elements.  
Often respondents are selected.

### ② Judgemental :-

→ Judging the people then asking the respondent

### ③ Quota

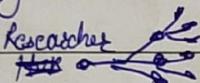
→ Dividing groups into quotas

→ Eg → gpc of girls & boys & then questioning them

### ④ Snowball Sampling

→ Based on the network of the research and respondents

→ Eg → Please share this form with others



### ① Simple Random

→ randomly selecting - Eg → 1, 2, 8 PRN

### ② Systematic Random

### ③ Stratified Random Sampling :-

→ two step process in which the population is divided into subpopulations, or strata.

→ It should be mutually exclusive and collective (uniqueness, no overlapping) exhaustive in that every population element should be assigned to one & only strata & no population elements should be omitted.

→ Eg → Study of Banks in India

### ⑧ Cluster Sampling :-

- In a housing Society; 5 cluster housing; for survey you analyze 5 clusters and then randomly selecting 2-3 clusters.
- Population is divided into mutual sub clusters.
- Whether all elements of clusters are not involved or some clusters are involved; others clusters you leave it.
- 

### ★ Determination of Sample Size :-

- Researcher can determine / justify it but it's not an appropriate method.
- Budget can also determine your sample process
- Time consuming
- Sample size calculator.

18 Aug/23 Data collection through questionnaire :- (Survey Instrument)

- ↳ ① Questionnaire Design
- ⑥ Data collection using questionnaire
- ⑦ Pilot study
- ⑩ Coding & Questionnaire
- ⑨ Data analysis.

### ① Questionnaire

- Printing out questionnaire and then interpreting the answers

### ⑥ Pilot Study

Collecting data for low sample (300-400 respondent)

Analyzing the answers for same question & eliminating the questions

## Designing Questionnaire

1. Primary Data
2. Scales
3. Open Ended Questions
4. Closed Ended Questions
5. Demographics

1. <sup>Primary Data</sup> Collection of questionnaires & collecting data (using Survey methods to collect data)

2. <sup>Scales</sup> 4 types of scales → nominal,

3-4 - CEB → when a question is included if you provide a scale of 1-10  
<sup>Closed ended questions</sup> → Providing options

OEB → No ~~other~~ options

<sup>open ended questions</sup> → Any answers that can be accepted from respondent.

\* → Problems faced by respondent.

5. Information related to respondent (describing respondent)

↳ includes → name, age, city, ~~course~~, specialization, income, gender, etc

↳ Always the first section should be related to respondent.

↳ Map down the objectives and questions in the questionnaire.

Eg → Impact of going to gym for good health.

\* Example of Questionnaire :-

→ Text description

Section A (Demographics)

- (Q1) → Name (optional)  
 (Q2) Age 10 - 20   
                   20 - 30   
                   30 - 40

Section(A)

Demographic  
Information

Section B

(Q3) Rate the following habits as per their importance (Rate 1 - 5)

- |                    |          |
|--------------------|----------|
| (a) Going Gym      | <u>1</u> |
| (b) Yoga           | <u>3</u> |
| (c) Juice & Fruits | <u>5</u> |
| (d) Early Rising   | <u>3</u> |
| (e) Sleep Schedule | <u>5</u> |

According to me/  
Objectives

(Q4) Select one of the following regarding to your exercise routine

- (a) once a week
- (b) twice a week
- (c) thrice a week
- (d) Above four ~~check~~

(Q5) Which of the following activities you follow (you can choose 2)

- (a) Going Gym
- (b) Yoga
- (c) Juice & Fruits
- (d) Early rising

\* Agreement scale

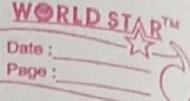
(Q6) How much do you agree that early rising is leading to good health?

5 4 3 2 1

Strongly agree Agree Neutral Disagree Strongly disagree

23/Aug/23

EF



## Questionnaire Designing :-

### ① Experimental Study :-

↳ Experiment / Instrumental → conducting Experiments for data.

### ② Financial Analysis :- Balance sheet etc, data results

### ③ Survey Research :- Survey Instrument (Questionnaire)

#### ★ Sampling Base:-

#### \* Designing Questionnaire

1. Primary data : Collected for research

2. Empirical Design : Quantitative

3. ~~Survey~~ Survey instructions : Questionnaire

#### \* The questionnaire method :-

→ Designed to suit the respondents' understanding and language command.

→ Simplest & most often used method of primary data collection.

→ This is a pre-determine set of questions in a sequential format.

→ Can be conducted to collect useful data from a large population in a short duration of time.

Convert the research objectives into the information needed.

Method of Administering the Questionnaire

Content of the Questions.

Motivating the respondent to answer

Determining type of Questions

Question design criteria

Determine the Questionnaire Structure

Physical presentation of the Questionnaire

Pilot testing the Questionnaire ← (Advisable / no method)

Administer Administering the Questionnaire

~~Section (A) :-~~

REVISION

~~Defno~~

Degree of Problem Definition :-

Exploratory Research

(Unaware of P)

Descriptive Research

(Aware of P)

Causal Research

(Problem clearly defined)

Exploratory Research

Descriptive Research :-

→ Describes characteristics of a population or phenomenon.

→ Understanding of the nature

→ Start with a hypothesis

Testing of the hypothesis using statistics

Theoretical Bg

→ Adding value to the existing literature.

### \* Causal Research :-

- Conducting to identify cause and effect relationships.
- Evidence of causality :-
  - ① The appropriate causal order of events.
  - ② Concomitant variation
  - ③ An absence of alternative plausible explanations

### \* Deductive

- Logical process of deriving a conclusion from known premise.
- Something known to be true.
- Testing a known theory
- Theory → hypothesis → Observation → Confirmation

### \* Inductive

- Bottoms up approach.
- Logical process of establishing a general proposition on basis of observation of particular facts.
- Observation → Pattern → Tentative hypothesis → Theory

### \* Data, Variables, Construct :-

- Structured vs unstructured data
- Qualitative data
- Quantitative data
- Meta data
- Big data
- Primary & Secondary data

### \* Data Scales :-

## ★ Sampling :-

→ When you conduct research about a group of people, it's rarely possible to collect data from every person in that group. Instead, you select a sample. The sample is the group of people who participate in the research paper:-

→ To draw your conclusions for research paper you have to carefully decide how you will select a sample that is representative of the group as a whole.

→ Non probability ST.

- Convenience
- Judgemental
- Quota
- Snowball

involves <sup>non</sup> random selection

## Probability

- Simple Random
- Systematic Random
- Stratified
- Cluster

involves random sel

### ① Simple Random :-

→ Random selection ~~from~~ between 1 to 100.

### ② Systematic Random

→ 2, 12, 22, 32, 42, 52...

### ③ Stratified

→ The company has 800 female & 200 male employees. You want to ensure that the sample reflect the gender balance of the company, so you sort the population into two of 80 female & 20 male.

### ④ Cluster :-

→ The company has offices in 10 cities across the country. You don't have the capacity to travel all 10 cities so you travel ~~saf~~ & you use random sampling to select 3 offices - these are your cluster.

## Using IBM - SPSS

Needed in Data Management

3 important stages :-

- Entering the data in software

- Pre-processing of Data

- Tools of Data Analysis - check what is your data, interpretate your data.

Before using tools; there are some requirements & needs  
so before using check those needs

SPSS - Statistical Package of Social Sciences

- Latest Version - 29.0

- Only for quantitative data

- most widely used for statistical analysis

- Can be used for analysing data for research study

- Useful statistical tools :- Correlation, regression, chi-square, t-test, 2-test, ANOVA,

Why use SPSS :-

Used by market research

Installation Process :-

Link is provided in ppt /

scratches → then find :- IBM SPSS Statistics

23

### T-Test

Compares the mean source / two groups

Can be applied in 2 ways

→ Independent Sample T-Test

→ Paired Sample T-Test

When to use?

→ diff between 2 groups. In class test if student scored less marks  
then ~~test is~~ a second conducted again.  
to see

lengthy test

Practical → Go to Analyse → Compare → Independent Sample Test  
→ Select grp values → 1 & 2.

Factor analysis :- (Data Reduction)

→ Exploratory factor analysis → technique for data Reduction

→ Confirmatory factor Analysis

defn of  
factor analysis

Combines  
highly correlated  
factors in a grp of  
factors -

## Unit - 6 References

## Unit - 7 Report Writing

## Unit - 8 Ethics & Research

UNIT 6 - No question related to this topic

What are References :-

Making use of previous research

Research is done in continuity.

Previous Research can be → Journal Papers

→ Book

→ Conference Paper

→ White Paper

→ Report

Most IMP thing in Research Paper → In text citations  
→ References

① In text citation (all details of authors)  
for eg → (Goyal, D.P., 2022)

② References

for eg → Goyal, D.P. 2022) "Data Mining Research"  
Journal of Data mining, Vol 20, No.1, pp. 7783  
of Harvard style

Reference Style → APA ← common IEEE  
imp while submitting | MLA → Harvard  
the Journal

27 Sept 2023 :- Report Writing

Interpretation :-

Significance of Report Writing :-

RW is considered a major component of the research study for the res

RW is one way of communicating your research with others. You do your research & do your findings.

Logically arrange your research

types of writing RW

→ Logical - collecting data, apply tools

→ Chronology → imp in experimental study i.e.g → before vs after corona. → What happened, how things worked.

- (4) Preparation of the final outline :-  
(5) Preparation of final bibliography.

### \* Layout of Research Report Writing :-

- (A) Preliminary Pages  
(B) Main Text (Actual Report)  
    (i) Introduction  
    (ii) Research Methodology  
    (iii) Data analysis  
    (iv) Statement of findings and recommendations  
    (v) The results  
    (vi) The implementations drawn from the results  
    (vii) The summary.

### (C) End Matter

↳ Bibliography, Appendix, Questionnaire

## UNIT - 8 - Ethics & Research

→ Mainly related to Plagiarism



- If you're taking any research & just copy pasting the work then it's called Plagiarism
- Work copied from another research papers, movies, videos, song, photos, etc.



### \* Types :-

- ① Complete Plagiarism
- ② Copy & Paste Plagiarism
- ③ Find & Replace
- ④ Patchwork
- ⑤ Unintentional
- ⑥ Self
- ⑦

\* Punishments :-

- Vary from organisations to organisations
- Levels of Plagiarism
  - ↳ If, upto 10% → no penalties

\* Avoiding Plagiarism :-

- Read, understand & then write in your own words.
- Do your own work.

\* Tools → Turnitin, Plagiarism.org, etc.

Unit 6 - Nothing will come

Unit 7 & 8 - One short note

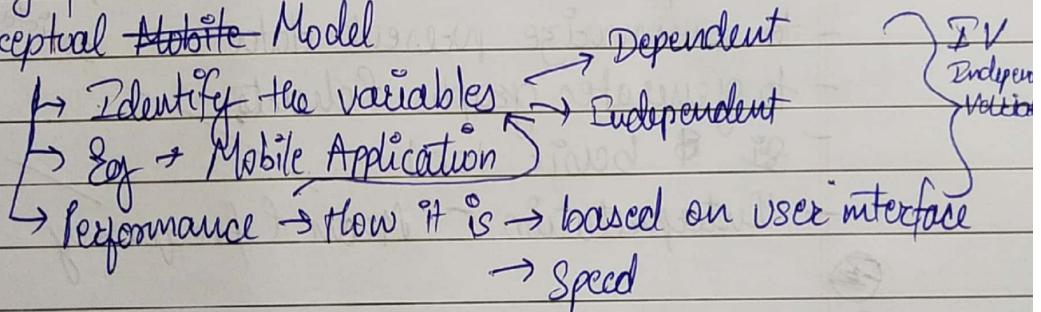
Unit 5 - Read PPT for tools

Unit 4 - Similar case studies according to class test.

Come on Oct-6

Case study from 3 & 4 :-

i) Conceptual Model



Dependent variable will be only 1

→ Usefulness

- Unit 12 → Not much questions - 50/  
Unit 6 → No questions  
Unit 7 & 8 → Report writing short note  
Unit 3 & 4 → Case study  
Unit 1 → Theory  
Unit 5 → Just some questions  
↳ no steps; no  
↳ ~~what~~ Correlation ←  
what statistical tool is used for split difference between 2 days

① Mean :- Comes under mean, median mode.

## SPSS - Statistical Package of Social Sciences

### Working with SPSS

- Descriptive :-
- to summarize present data
  - to generate graphs & charts
  - ~~is~~ basic tool
  - Interpretation - Mean & frequency

### Correlation :-

Analyze the relationship between two variables

Eg:- check the correlation → ~~is~~ -ve or +ve  
between attendance of student & student library time

## Regression Analysis :-

Used to check the impact of one or more variables on another.

## Regression Analysis of Split Data Set :-

↳ Split Data Set

↳ Divide your dataset in a categorized variable  
(Gender, age, group)

## Cronbach's Alpha

- To check the reliability of the scale

### Interpretation

↳ Check the value of Cronbach's Alpha  
(Its value should be more than 7)

## T-Test :-

- Used to see the difference between two groups

check significant value < 0.5 of levenes' test

(from table).

## factor analysis (Data Reduction)

↳ technique of data reduction

Large amount of data variables factors (variables) can be reduced to less number of factors (variables)

Combines highly correlated factors in a group of factors

Rename newly created factors