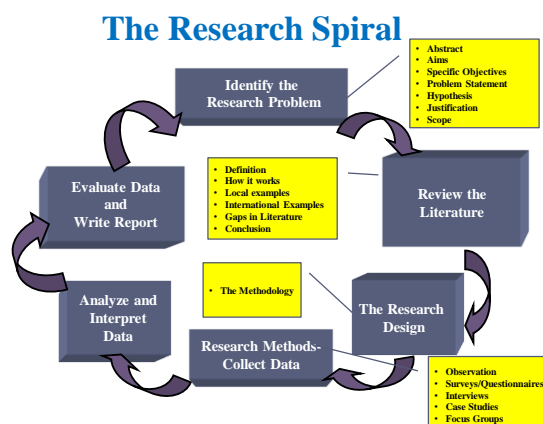


Research Designs and Research Methods



Meaning of Research Design

- The research design refers to the **overall strategy that you choose** to integrate the different components of the study in a coherent and logical way, so that you will effectively address the research problem;
- It constitutes the blueprint for the collection, measurement, and analysis of data.
- Note that **your research problem determines the type of design** you should use, not the other way around!

RESEARCH METHODOLOGY/DESIGNS VS. RESEARCH METHODS

1. **Methodology/Designs**- is the **study of how research is done**, how we find out about things, and how knowledge is gained. In other words, methodology is about the principles that guide our research practices. Methodology therefore explains why we're using certain methods or tools in our research.
2. **Methods**- Research methods are the **tools, techniques or processes** that we use in our research. These might be, for example, surveys, interviews, or participant observation. Methods and how they are used are shaped by methodology.

Types of Research Designs

- Three traditional categories:
 1. **Exploratory.**
 2. **Descriptive.**
 3. **Causal/Correlational Analysis**- *Correlational analysis is a technique used to measure the association between two variables.*
- The choice of the most appropriate design depends largely on the objectives of the research and how much is known about the problem and research objectives.

RESEARCH METHODS

- The various methods of data gathering involve the use of appropriate recording forms.
- These are called tools or instruments of data collection. They consist of :
 1. **Observations.**
 2. **Questionnaires.**
 3. **Interviews.**
 4. **Lab/ Field Experiments.**
 5. **Case Studies.**
 6. **Correlation studies.**
 7. **Pilot Study.**
 8. **Content Analysis.**

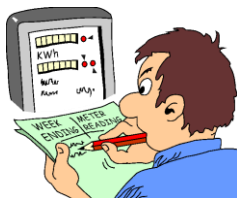
TRIANGULATION

- Triangulation means *using more than one method to collect data on the same topic*.
- The *main purpose* of triangulation in educational and social science research *is to increase the credibility and validity of the results*.
- However, the purpose of triangulation is not necessarily to cross-validate data but rather to capture different dimensions of the same phenomenon.

TYPES OF TRIANGULATION

- **Data triangulation:** Involves the use of different data, which could mean using data collected from different sources; E.g. **two different universities** or a single university at two different times.
- **Investigator triangulation:** Involves using different people as researchers; for example, the **use of two or three observers**, which increases the conformability and credibility of conclusions made in analysing the data.
- **Methodological triangulation:** Involves using different methods to research a single topic. E.g. a researcher might choose to **send a questionnaire** into a company **and conduct interviews** afterwards.
- **Theoretical Triangulation:** Involves using **different theoretical approaches** to address a single situation. This is advantageous in that it requires the researcher to look at the data analysis from different viewpoints.
- **Multiple triangulation:** **Combines the four basic types** of triangulation.
- **Credibility/Trustworthiness:** An estimate whether research findings are **believable or true**. It can be **increased** if research subjects accept the findings and through **reflexivity and triangulation**.
- **Reflexivity** :Refers to the researcher's **need to constantly be aware of how and why they are conducting the research**, and to recognize at what points their own beliefs and opinions about the topic under investigation might have influenced data collection of analysis.

DATA COLLECTION

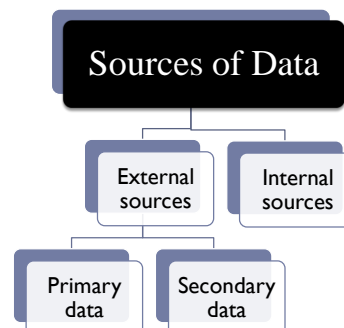


Introduction

- Data can be define as the *quantitative or qualitative* value of a variable (e.g. number, images, words, figures, facts or ideas).
- *Quantitative data* are measures of values or counts and are expressed as numbers.
- *Qualitative data* is any data that is non-numerical. It is concerned with opinions, attitudes and feelings.
- Data is one of the most important and vital aspect of any research study.

Factors to be Considered Before Collection of Data

- Object and scope of the enquiry.
- Sources of information.
- Quantitative expression.
- Techniques of data collection.
- Unit of collection.



Internal & External Sources of Data

External sources of data

- When information is collected from outside agencies is called external sources of data.
- Such data is either **primary** or **secondary**.
- This type of information can be collected by census or sampling method by conducting survey.

Internal sources of Data

- Many institutions and departments have information about their regular functions, for their own internal purposes.
- When this information is used in any survey is called internal sources of data.

Primary Data

- Data that has **been collected from first-hand** experiences is known as primary data.
- It has **more reliable, authentic** and not been published anywhere.
- Primary data has not been changed or altered by human being, therefore its validity is greater than secondary data.

Collection of Primary Data

- There are several methods of collecting primary data. These are:-
 1. **Observations.**
 2. **Questionnaires.**
 3. **Interviews.**
 4. **Lab/ Field Experiments**
 5. **Case Studies.**
 6. **Correlation studies**
 7. **Pilot Study**
 8. **Content Analysis**

Observations

- A good researcher is first a good observer. In order to make good observations, you must pay attention to details and use your five senses.
- In research, we pay very close attention to what we can **see, hear, or touch, or smell**. *Tasting doesn't always translate into good research practice... why???*
- **Observation** is defined as **using** one or more of **the five senses** to gather information, and may include the use of equipment.
- Observations themselves are just facts.

...cont'...Observations

- Observations may be **qualitative** or **quantitative**.
- **Qualitative** observations are those that **describe qualities**, properties or characteristics of objects or phenomena. Color, texture, smells, sounds are all examples of qualitative observations.
- **Quantitative** observations are those that can be **measured** in numbers. Mass, volume, speed, temperature are a few examples. Tools are often used to make quantitative observations

Inferences

- Inferences, are **how we interpret the observations** we make. Observations themselves are just facts.
- Inferences **take those facts and try to make sense of them** by applying our past experiences or prior knowledge.
- You use your thinking ability in order to make inferences instead of senses. We are so good at this that sometimes we confuse the two.

Inferences

- Observation:
 - The grass on the school's front lawn is wet.
- Possible inferences:
 - It rained.
 - The sprinkler was on.
 - There is dew on the grass in the morning.
 - A dog urinated on the grass!
- All of these inferences could possibly explain why the grass is wet. They are based on prior experiences.

Predictions

- A **prediction** is defined as the *use of knowledge to identify and explain observations*, or changes, in advance.
- Predictions can be made from inferences.
- A PREDICTION **may or may not happen**, but it should be logical. Key word is "**WILL.**"

EXAMPLES:

- For example, a student wakes up to thunder one morning.
 1. He may **observe** the thunder – using his sense of hearing, he made a factual, qualitative observation.
 2. The sound of the thunder led to the **inference** that it was raining – it might not have been raining.
 3. The student then **predicted** that they would not go outside during school that day because of the rain.

Inferences

- Observation:
 - The school fire alarm is going off.
- Possible Inferences:
 - The school is on fire.
 - We are having a fire drill.
 - A student pulled the fire alarm.

Predictions vs. Inferences

- | | |
|---|--|
| <ul style="list-style-type: none"> ‣ Will be proven at the end | <ul style="list-style-type: none"> ‣ May or may not be explained at the end ‣ May not be about what happens next |
|---|--|

Example 2:

- I put five plants into a dark room for six months.
 - **Observation:** All five plants died.
 - **Inference:** All plants die without sunlight.
 - **Prediction:** If a plant stops receiving sunlight it will die.

**OBSERVATION, INFERENCE,
OR PREDICTION?**

The bell is ringing

OBSERVATION

**OBSERVATION, INFERENCE,
OR PREDICTION?**

The flower has red petals

OBSERVATION

**OBSERVATION, INFERENCE,
OR PREDICTION?**

The fire might be alive

INFERENCE

**OBSERVATION, INFERENCE,
OR PREDICTION?**

The boy has tears in his
eyes, so I think he is sad

INFERENCE

**OBSERVATION, INFERENCE,
OR PREDICTION?**

The dog is going to burp

PREDICTION

**OBSERVATION, INFERENCE,
OR PREDICTION?**

There is a lot of red in the
painting, so I think the artist
was mad

INFERENCE

**OBSERVATION, INFERENCE,
OR PREDICTION?**

The cell phone is making a
noise

OBSERVATION

**OBSERVATION, INFERENCE,
OR PREDICTION?**

The exam is going to be
easy

PREDICTION

**MAKE AN OBSERVATION
ABOUT THE PICTURE**



**MAKE AN INFERENCE
ABOUT THE PICTURE**



MAKE A PREDICTION ABOUT THE PICTURE



1. Participant Observation: In this observation, the observer is a part of the phenomenon or group which observed and he acts as both an observer and a participant.

Example: a study of how students behave during the “*Sports Day*”. The persons who are observed should not be aware of the researcher’s purpose. Then only their behaviour will be ‘natural.’

2. Direct Observation : This means observation of an event personally by the observer when it takes place. This method is flexible and allows the observer to see and record subtle aspects of events and behaviour as they occur. He is also free to shift places, change the focus of the observation.

Example: Observer is physically present to monitor

Indirect Observation : This does not involve the physical presence of the observer, and the recording is done by mechanical, photographic or electronic devices.

Example : Recording customer and employee movements by a special motion picture camera mounted in a department of large store.

Types of observation

1. Participant Observation/ Non-participant Observation
2. Direct Observation/Indirect Observation
3. Structured/Unstructured Observation.
4. Disguised/Undisguised.
5. Natural/Contrived.
6. Personal/Mechanical.

Non - Participant Observation : in this method, the observer stands apart and does not participate in the phenomenon observed. Naturally, there is no emotional involvement on the part of the observer. This method calls for skill in recording observations in an unnoticed manner.

Example : use of recording devices to examine the details of how people talk and behave together.

3. Structured Observation : Also known as systemic observation. An observation that **uses an explicitly pre-determined behavioural** categories of behavior.

For structured observation *the researcher specifies in detail what is to be observed and how the measurements are to be recorded.*

Example: An auditor performing inventory analysis in store.

Unstructured Observation:

In unstructured observation **the observer monitors all aspects of the phenomenon** that **seems relevant** to the problem at hand.

Example: Observing children playing with new toys.

► Disguised or undisguised

- In disguised observation, respondents are unaware they are being observed and thus behave naturally. Disguise is achieved, for example, by hiding, or using hidden equipment or people disguised as shoppers.
- In **undisguised** observation, respondents are aware they are being observed. There is a danger of the Hawthorne effect – people behave differently when being observed.

► Natural or contrived

- **Natural** observation involves observing behavior as it takes place in the environment, for example, eating hamburgers in a fast food outlet.
- In **contrived** observation, the respondents' behavior is observed in an artificial environment, for example, a food tasting session.

- **Personal:** In personal observation, a researcher observes actual behavior as it occurs. The observer may or may not normally attempt to control or manipulate the phenomenon being observed. The observer merely records what takes place.
- **Mechanical:** Mechanical devices (video, closed circuit television) record what is being observed. These devices may or may not require the respondent's direct participation. They are used for continuously recording on-going behavior.

Advantages & Disadvantages of Observation Technique:

Advantages	Disadvantages
1) Subject bias is eliminated.	1) An expensive method.
2) Relates to what is currently happening.	2) Information is very limited.
3) Independent of respondent.	3) Unforeseen factors may interfere with the observational task.

Example Question.....

A Researcher conducted an observation study to investigate *how people react when walking towards each other along a corridor* in a building where different office staff work. To do this, she asked for permission to set up hidden cameras for a day to record people's encounters along one of the main corridors in the building. The results from the study are shown in the table below:

Avoids Eye Contact	Smiles	Says hello	Makes Eye Contact	Nods	TOTAL
80	48	40	24	8	200

- a.) This study is an example of the use of structured observation. What is **structured observation**? (1 mark)
- Structured observation in this study means that the researcher set out to observe the pre-determined behavior of how people react when walking towards each other along a corridor**
- b.) Outline **TWO conclusions** that can be made **from** the data collected in **this study**. (2 marks)
- Conclusions could include:
- **the most frequent behaviour was to avoid eye-contact, which suggests people do not like acknowledging each other in a corridor; (INFERENCE)**
 - **The lowest frequency of behaviour was 'nods head', which suggests people do not like greeting people as they meet in a corridor. (INFERENCE)**

Questionnaires/Surveys



QUESTIONNAIRES:

- It comprises a series of questions prepared by the researcher that are answered and filled by all the respondent.
- This is usually *popular self report* or self-administered method.
- It commonly used to get demographic data-(*e.g. of demographic data includes: age, ethnicity, income, education level*)

N/B: it is recommended that one puts questions that request demographic data at the end of a questionnaire, so that the respondent does not feel stereotyped as they fill in the questionnaire.

- It allows the collection of larger data from large no. of sample quickly and inexpensively.

Be careful NOT to introduce Confounding Variables in Questionnaires

- A confounding variable is an outside influence that changes the effect of a dependent and independent variable.
- This extraneous influence is used to influence the outcome of an experimental design.
- Simply, a confounding variable is an extra variable entered into the equation that was not accounted for.
- Confounding variables can ruin an experiment and produce useless results.
- They suggest that there are correlations when there really are not.

- In an experiment, the independent variable generally has an effect on the dependent variable.
- For example**, if you are researching whether a lack of exercise has an effect on weight gain, the lack of exercise is the independent variable and weight gain is the dependent variable.

A confounding variable would be any other influence that has an effect on weight gain. **Amount of food consumption** is a confounding variable, **or weather could be a confounding variable.**

Each may change the effect of the experiment design.

Confounding Variable Example

Weather

- An example is the correlation between murder rate and the sale of ice-cream. As the murder rate raises so does the sale of ice-cream. One suggestion for this could be that murderers cause people to buy ice-cream. This is highly unlikely. A second suggestion is that purchasing ice-cream causes people to commit murder, also highly unlikely.
- Then there is a third variable which includes a confounding variable. It is distinctly possible that the weather causes the correlation. While the weather is icy cold, fewer people are out interacting with others and less likely to purchase ice-cream. Conversely, when it is hot outside, there is more social interaction and more ice-cream being purchased.
- In this example, the weather is the variable that confounds the relationship between ice-cream sales and murder.**

Structure of Question:



Open ended question	Close ended/fixed/alternative
<ul style="list-style-type: none"> When researcher want more information. difficult to analyze. 	<ul style="list-style-type: none"> Limited respond. Easy to analysis
e.g. Why did you choose to take your graduate work at this university?	e.g. Have you ever taken a course in statistics? () yes () No

Types of closed ended question

- A. Dichotomous questions
- B. Multi choice questions
- C. Cafeteria questions
- D. Rank order questions
- E. Rating scale
- F. Checklist
- G. Visual analogue scales[VAS]

A. Dichotomous questions

It makes the respondent to make a choice between two responses such as “Yes/No”
“Male/Female”

E.g. Have you ever been sent home by the fashion cops?



B. Multi-choice questions

- It offers more than two response alternatives
- Graded alternatives are preferable for opinion or attitude questions that give more information
- E.g. how important is it to you to avoid being expelled from University at this time
 1. Extremely important
 2. Very important
 3. Somewhat important
 4. Not at all important

C. Cafeteria questions/Forced-Choice Questions

- These are a special type of MCQ that ask respondents to select a respondent's response that most closely corresponds to their view.
- E.g. Students have different opinions or attitudes about how IS project supervisors should communicate with their students; which of the following statements best represents your view?
 1. I prefer direct face-to-face feedback in a public setting only when needed
 2. I prefer direct face-to-face feedback in a private setting only when needed
 3. I prefer feedback via written note only when needed
 4. I prefer feedback via email only when needed

D. Rank-order questions

- It asks respondents to rank target concept along some continuum such as most favorable or most to least important.
- Respondents are asked to mark 1,2,3,4.... According to their importance and there should not be more than 10 alternatives
- E.g. people value different things about life. Below is a list of principles or ideas that are often cited when people are asked to name things they value most by putting 1,2,3,etc.
 - i. Achievement and success
 - ii. Family relationship
 - iii. Health
 - iv. Money
 - v. Religion

F. Rating scale:

It asks the respondent to judge something along an order dimension.

e.g. How satisfied are you with the nursing care during your hospitalization?

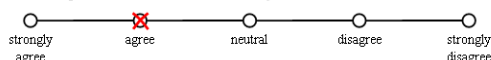
Extremely dissatisfied Neutral Extremely satisfied
0 1 2 3 4 5 6 7 8 9 10

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
(1)	(2)	(3)	(4)	(5)

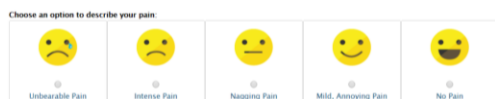
Likert Scale

- ▶ A **“Likert scale”** is the sum of responses to several Likert items.
- ▶ A **“Likert item”** is a statement that the respondent is asked to evaluate in a survey. In the example below, the statement, *“Wikipedia has a user friendly interface ”* is a Likert item. The table as a whole is the Likert scale.

1. Wikipedia has a user friendly interface.



Example of a Visual Analog Scale



2. **Asks for only one answer per question:** The purpose of a survey is to find out information. A question that asks for more than one answer in the same question will not provide the information you are seeking.
 - ▶ For example, a researcher investigating a new food snack asks: *“Do you like the texture and flavor of the snack?”*
 - ▶ If a respondent answers “no”, then the researcher will not know if the respondent dislikes the texture or the flavor, or both.
 - ▶ Another question asks, *“Were you satisfied with the quality of our food and service?”*
 - ▶ Again, if the respondent answers “no”, there is no way to know whether the quality of the food, service, or both were unsatisfactory.
 - ▶ A good question asks for only one “bit” of information.

G. Visual Analog Scale (VAS)

- ▶ It is useful for assessing perception of physic stimuli such as pain, sleep, quality and shortness of breath.

Advantages of Visual Analog Scale

1. **Ease of use:** The VAS is extremely convenient to fill out for the respondents and is extremely easy to keep track of for the survey maker.
2. **Super quick to fill out:** This scale takes less than a minute to fill out.
3. **Highly reliable:** VAS is extremely reliable to track a patient’s progress by conducting it before and after a surgery or therapy, especially amongst the literate patients.

Disadvantage

- ▶ It includes concern with reliability and validity.

Qualities of good questions on a questionnaire:

- ▶ There are **good** and **bad** questions. The qualities of a good question are as follows:

1. **Encourages the truth:** Questions must be non-threatening. When a respondent is concerned about the consequences of answering a question in a particular manner, there is a good possibility that the answer will not be truthful.

Anonymous questionnaires that contain no identifying information are more likely to produce honest responses than those identifying the respondent.

If your questionnaire does contain sensitive items, be sure to clearly state your policy on confidentiality.

3. **Can accommodate all possible answers:** Multiple choice questions are the most popular type of survey questions because they are generally the easiest for a respondent to answer and the easiest to analyze.
 - ▶ Asking a question that does not accommodate all possible responses can confuse and frustrate the respondent. For example, consider the question: *What brand of computer do you own? —*
 - A. IBM PC
 - B. Apple
 - ▶ Clearly, **there are many problems with this question:**
 - ▶ What if the respondent doesn't own a microcomputer?
 - ▶ What if he owns a different brand of computer?
 - ▶ What if he owns both an IBM PC and an Apple?
 - ▶ There are **two ways to correct this kind of problem:**

- ▶ The **first way is to make each response a separate dichotomous item** on the questionnaire. For example:

1. Do you own an IBM PC? (circle: Yes or No)
2. Do you own an Apple computer? (circle: Yes or No)

- ▶ **Another way to correct the problem is to add the necessary response categories and allow multiple responses.** This is the preferable method because it provides more information than the previous method. Example:

What brand of computer do you own?(Check all that apply)

- ☐ Do not own a computer
- ☐ IBM PC
- ☐ Apple
- ☐ Other

- 5. **Produces variability of responses:** When a question produces no variability in responses, we are left with considerable uncertainty about why we asked the question and what we learned from the information.

If a question does not produce variability in responses, it will not be possible to perform any statistical analyses on the item.

For example:

What do you think about this report? ___

- A. It's the worst report I've read.
- B. It's somewhere between the worst and best.
- C. It's the best report I've read.

- ▶ Since almost all responses would be choice B, very little information is learned.
- ▶ **Design your questions so they are sensitive to differences between respondents.**

- 7. **Does not imply a desired answer:** The wording of a question is extremely important.

We are striving for objectivity in our surveys and, therefore, must be careful not to lead the respondent into giving the answer we would like to receive.

- ▶ Leading questions are usually easily spotted because they use negative phrases. Examples:

- ▶ **Wouldn't you like to receive our free brochure?**

- ▶ **Don't you think the Government is spending too much money?**

- 4. **Has mutually exclusive options:** A good question leaves no doubt in the mind of the respondent. **There should be only one correct or appropriate choice for the respondent to make.**

An obvious example is:

Where did you grow up? ___

- A. country
- B. farm
- C. city

- ▶ A person who grew up on a farm in the country would not know whether to select choice A or B.
- ▶ This question would not provide meaningful information. Worse than that, it could frustrate the respondent and the questionnaire might find its way to the trash.

- ▶ Another example:

Are you against drug abuse? (circle: Yes or No)

Again, there would be very little variability in responses and we'd be left wondering why we asked the question in the first place.

- 6. **Follows comfortably from the previous question:** Creating a questionnaire is similar to writing anything else.
 - ▶ Changes between questions should be smooth.
 - ▶ Grouping questions that are similar will make the questionnaire easier to complete, and the respondent will feel more comfortable.
 - ▶ Questionnaires that jump from one unrelated topic to another feel disorganized and are not likely to produce high response rates.

QUALITIES OF A GOOD QUESTIONNAIRE:

1. The questions should be a reflection of the research question/objectives.
2. The length of questionnaire should be proper one-i.e. a good balance of open and closed questions.
3. The language used should be easy and simple.
4. The term used are explained properly.
5. The questions should be arranged in a proper way.
6. The questions should be in logical manner.
7. The questions should be described precisely and correctly.
8. The answers should be short and simple.
9. These answers should be accurate.
10. The answers should be direct one.
11. The answers should be understand able to everyone of respondents.

- ▶ At the end of any questionnaire, a researcher should be able to gather information that provides useful insight to their research question.

▶ **EXAMPLE QUESTION:**

Chania bookshop has re-launched its online shopping website. The research department has created a pop-up online questionnaire for website users to complete. The aim of the questionnaire is to gather feedback on the new website. The pop-up questionnaire will appear at the end of the website visit regardless of whether or not the visitor has made a purchase.

- a) Identify at least **three types of information** which the questionnaire needs to gather to provide useful insight into the users' experience of the website. Give reasons for the suggestions you make.

- b) Two weeks after the launch of the questionnaire, the Research Director discovers that only 20% of the customers who start the questionnaire complete it. **Identify at least three reasons why there might be such a high drop-out rate.** What could have been done when designing the questionnaire to avoid this? Illustrate your answer with examples.

▶ **Reasons might include some or all of the following:**

1. *Is it clear why the questionnaire is being used/why the individual is being asked to take part?*
2. *Length of questionnaire – if website visitors are completing it after they visit, it needs to be an appropriate length, and the content needs to be sharp and focused.*
3. *Question wording and wording of instructions – are they clear and easy to understand?*

1. *Demographic info – e.g. gender, age bracket, income band etc of those who visit the website-so as to find out who are the customer base.*
2. *Whether the visitor bought or did not buy at that visit*
3. *Shopping history with the bookstore – are there differences between those who were regular users of last website and new users?*
4. *Ease of use of website – helping to identify what does/doesn't work.*
5. *Likes/dislikes.*
6. *What further improvements they might like to see.*
7. *Likelihood of using the website again.*
8. *Can they be contacted for further research? If so, contact details.*

4. *Does the questionnaire make sense? Are the questions appearing in the right order? Do the questions make sense?*
5. *Relevance of questions - are they all relevant to all respondents, is the filtering correct?*
6. *Is there a filter/mechanism in place for recognizing those who have already completed the questionnaire on another occasion?*
7. *Is it set up in a way that makes it interesting/engaging to respondents?*
8. *Does the questionnaire allow respondents to answer truthfully? Lack of don't know / not applicable options etc. may lead to them abandoning and/or inability to skip questions they are unable to answer.*
9. *Do they need to answer all parts of all questions? Making questions compulsory may discourage completion.*
10. *Is there the right balance of open and closed questions?*
11. *Are all of the questions relevant to the stated aim? Visitors may be unwilling to answer questions which stray from what they expect.*
12. *Technical limitations – is the questionnaire working properly? Is it easy to read/navigate in all formats (e.g. mobile)?*

2) Interview Method

- ▶ The interview method of collecting of data involves presentation of oral stimuli and reply in terms of oral response.
- ▶ It can be used through personal interviews and if possible, through telephone interview

Classification

2.1. Personal interview

- A. Structured
- B. Unstructured
- C. Qualitative
- D. Quantitative
- E. Semi-structured (flexible but structured)
- F. Non-directive (free talk on issues)
- G. Focused (in depth talk on an issue) (Media)

2.2.Telephonic interview



II. Telephone interview:

- collecting information consists in contacting respondents on telephone.

Advantage:

- It is more flexible in comparison to mailing method
- It is faster than other methods
- Recall is easy, call back are simple and economical

Disadvantage:

- Shortage of time for respondents to reply
- Restricted to respondents who have telephone facilities

2.1 Personal interviews:

- Asking questions face to face to collect the information.
- The sort of investigation may be in the form of direct personal investigation or may be indirect.



a) Structured interview:

Involve the use of a set of predetermined questions and of highly standardized techniques of recording.

Advantage	Disadvantage
Require less knowledge and skill	Provide only superficial information
Less time consuming	More rigid hence no freedom
More systematic and authentic	Not possible in all situations

b) Unstructured interviews:

- Flexibility of approach to questioning.
- It doesn't follow a system of predetermined questions and standardized techniques of recording information.

Advantage:	Disadvantage
Allow greater freedom to ask question	It demands knowledge and greater skill
Methods provide flexibility according to situation	Difficult to analyze the information
Data are more adequate and accurate	Time consuming

- c) **Qualitative interviews** are sometimes called **intensive or in-depth interviews**. These interviews are semi-structured; the researcher has a particular topic about which he or she would like to hear from the respondent, but questions are open ended and may not be asked in exactly the same way or in exactly the same order to each and every respondent.

d) Quantitative interviews:

- might also be called **standardized interviews**. The difference between surveys and standardized interviews is that questions and answer options are read to respondents rather than having respondents complete a questionnaire on their own.

Key differences:

Qualitative interviews	Quantitative interviews
<ul style="list-style-type: none"> Good for exploring issues in-depth More freedom for interviewer to explore issues Setting can be important, with sensitivity of topic a key determinant in whether phone interviews can be used Can be more than one-to-one (e.g. paired) More time consuming than quant (therefore also more costly per interview, and possibly lower sample sizes) More open questions Less directive than in quant Use of projective or enabling techniques 	<ul style="list-style-type: none"> Good for directional, conclusive and robust data gathering Standard questions (no interviewer freedom) Wide range of settings possible Generally one-to-one Can ask remotely, e.g. by phone. May not involve an interviewer – e.g. web-based surveys may be viewed as interviews Usually shorter than qual More closed questions Pre-coding restricts range of possible answers Some probing possible, but less than in qual Cost per interview usually lower, therefore larger sample sizes more achievable, therefore more scope for analysing sub-groups
The interviewer:	The interviewer:
<ul style="list-style-type: none"> Must listen and respond to subtle clues Must be skilled at reading non-verbal info Recorded on video/audio, may be transcribed 	<ul style="list-style-type: none"> Must question efficiently and effectively Listening skills important but less than qual Many ways to record (CAPI, CATI, CAWI)

Kinds of questions

- ▶ Kvale (1996)* has identified nine types of question asked in qualitative interviews. Keep these in mind when you are composing your interview guide.
- 1. **Introducing questions:** 'Why did you...?' or 'Can you tell me about...?' Through these questions you introduce the topic.
- 2. **Follow up questions:** Through these you can elaborate on their initial answer. Questions may include: 'What did you mean...?' or 'Can you give more detail...?'
- 3. **Probing questions:** You can employ direct questioning to follow up what has been said and to get more detail. 'Do you have any examples?' or 'Could you say more about...?'

- 3. **Specifying questions:** Such as 'What happened when you said that?' or 'What did he say next?'
- 4. **Direct questions:** Questions with a yes or no answer are direct questions. You might want to leave these questions until the end so you don't lead the interviewee to answer a certain way.
- 5. **Indirect questions:** You can ask these to get the interviewee's true opinion.
- 7. **Structuring questions:** These move the interview on to the next subject. For example, 'Moving on to...'
- 8. **Silence:** Through pauses you can suggest to the interviewee that you want them to answer the question!
- 9. **Interpreting questions:** 'Do you mean that...?' or 'Is it correct that...?'

Lab Experiments

- ▶ This type of experiment is conducted in a well-controlled environment – *not necessarily a laboratory* – and therefore accurate and objective measurements are possible.
- ▶ *A study that takes place within a controlled (or artificial) environment and where the I.V. can be manipulated and the D.V. can be measured.*
- ▶ The researcher decides where the experiment will take place, at what time, with which participants, in what circumstances and using a standardized procedure.
- ▶ An experiment that takes place in a natural setting and a key variable is manipulated so that its effect can be measured.
- ▶ Experiments have to be '**operationalized**', i.e. *Defining variables in a form that can be easily measured.*
- ▶ *It is important from the point of view of objectivity, replicability and control of extraneous variables to make sure that variables are clearly defined.*

Extraneous variables (EV)

All variables, which are not the independent variable, but could affect the results (DV) of the experiment. EVs should be controlled where possible.

Lab Experiments

▶ Advantages:

- 1. Casual relationships can be established by manipulating the key variable and measuring its effects.

▶ Disadvantages:

- 1. Behaviour maybe artificial which would result in poor ecological validity.
- 2. Demand characteristics can affect results
- 3. Less control of extraneous/confounding variables more likely in a natural environment.
- 4. Ethical issues e.g. participants didn't agree to take part; might experience distress; can not be debriefed.

Field Experiments

- ▶ Field experiments are done in the everyday (i.e. real life) environment of the participants. The **researcher still manipulates the independent variable**, but in a real-life setting (so cannot really control extraneous variables).

- ▶ An example is *Holting's hospital study on obedience*.

▶ Advantages:

- 1. Behavior in a field experiment is more likely to reflect real life because of its natural setting, i.e. **higher ecological validity** than a lab experiment.
- 2. There is **less likelihood of demand characteristics** affecting the results, as participants may not know they are being studied. This occurs when the study is secret.

▶ Disadvantage:

- 1. There is **less control over extraneous variables** that might bias the results. This makes it difficult for another researcher to replicate the study in exactly the same way.

Ecological validity
The degree to which an investigation represents real-life experiences.
Experimenter effects
These are the ways that the experimenter can accidentally influence the participant through their appearance or behavior.
Demand characteristics
The clues in an experiment that lead the participants to think they know what the researcher is looking for (e.g. experimenter's body language).

Natural Experiments

- ▶ Natural experiments are conducted in the everyday (i.e. real life) environment of the participants, but here the **researcher has no control over the IV** as it occurs naturally in real life.
- ▶ E.g. [Hodges and Tizard's attachment research \(1989\)](#) compared the long term development of children who have been adopted, fostered or returned to their mothers with a control group of children who had spent all their lives in their biological families.
- ▶ **Advantages:**
 1. Behavior in a natural experiment is more likely to reflect real life because of its natural setting, i.e. **very high ecological validity**.
 2. There is **less likelihood of demand characteristics** affecting the results, as participants may not know they are being studied.
 3. Can be used in situations in which it would be ethically unacceptable to manipulate the independent variable, e.g. [researching stress](#).
- ▶ **Disadvantages:**
 1. They may be more expensive and time consuming than lab experiments.
 2. There is **no control over extraneous variables** that might bias the results. This makes it difficult for another researcher to replicate the study in exactly the same

- (a) Define what is meant by the term '*natural experiment*'. [2 marks]
Natural experiments in this study means that the researcher conducted a study in a real life environment of those living inside or outside the danger zone, and the researcher could not control the independent variable.
- (b) Explain *one advantage and one disadvantage* of a 'natural experiment'. [2 marks]
Advantages should be CONTEXTUALISED e.g:
- ▶ *Natural experiments have very high ecological validity. In this particular example, we see very high ecological validity in that the study was carried out in a natural occurring environment, i.e. areas with volcanic activity.*
- Disadvantages should be CONTEXTUALISED e.g:*
- ▶ *There is no control over extraneous variables that might bias the results. This makes it difficult for another researcher to replicate the study in exactly the same way. In this study the researcher has no control as to when/how the volcano will erupt, thus making it difficult to replicate the study.*
- (c) Identify:
- (i) The **independent variable (IV)** in the above research; [1 mark]
Living Outside/Inside the danger zone
 - (ii) The **dependent variable (DV)** in the above research. [1 mark]
Mean stress level score

Demand Characteristics...

- ▶ Demand characteristics are ***signs in the environment that might alter participants behaviour*** (the environment can include the investigator's behaviour). They change their behaviour and act according to the cues they pick up.
- ▶ Demand characteristics can include such things as:
 - ▶ the participant trying to guess what the researcher is trying to find out, so the participant tries to behave in a helpful (or unhelpful) manner.
- ▶ Other demand characteristics may result in participants behaving in ways that they don't usually behave, feeling that they are being evaluated and then feeling stressed or nervous.
- ▶ Participants may also want to show themselves in the best light and show a social desirability in their answers to interviews.

Example Question

Researchers carried out a *natural experiment* measuring the stress levels of ten participants who continued to live near a volcano even after an eruption. These were compared with the stress levels of ten participants who lived outside the danger zone of a volcanic eruption. Stress levels were measured on a ten point scale with 1 being low stress and 10 being high stress.

	Inside Danger zone	Outside Danger zone
Mean stress level score	8.2	3.1

CASE STUDIES

- ▶ Case studies are in-depth investigations of a single person, group, event or community.
- ▶ The *case study is not itself a research method*, but researchers select methods of data collection and analysis that will generate material suitable for case studies. (e.g. **observations & interviews**).
- ▶ Famous case studies include Little Hans (1909) and The Rat Man (1909).
- ▶ The research may also continue for an extended period of time, so processes and developments can be studied as they happen.
- ▶ Case studies **provide rich qualitative data** and have **high levels of ecological validity**.

- ▶ The case study method often involves simply observing what happens to, or reconstructing ‘the case history’ of a single participant or group of individuals (such as a school class or a specific social group)

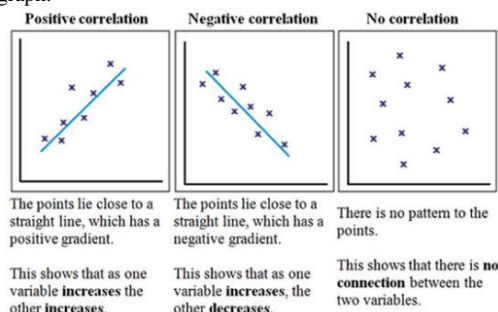
▶ Advantages:

1. Provides detailed (rich qualitative) information.
2. Provides insight for further research.
3. Permitting investigation of otherwise impractical (or unethical) situations.

▶ Disadvantages:

1. Can't generalize the results to the wider population.
2. Researchers' own subjective feeling may influence the case study (researcher bias).
3. Difficult to replicate.
4. Time consuming.

- ▶ A correlation can be **expressed visually**. This is done by **drawing a scattergram** - that is one can plot the figures for one variable against the figures for the other on a graph.



Disadvantages of Correlations

1. Correlation is not and **cannot be taken to imply causation**. Even if there is a very strong association between two variables we cannot assume that one causes the other. *E.g. suppose we found a positive correlation between watching violence on T.V. and violent behavior in adolescence. It could be that the cause of both these is a third (extraneous) variable - say for example, growing up in a violent home - and that both the watching of T.V. and the violent behavior are the outcome of this.*
2. Correlation **does not allow us to go beyond the data that is given**. *E.g. suppose it was found that there was an association between time spent on assignments (1/2 hour to 3 hours) and number of units passed in BTC/BIF/BBIT (1 to 6). It would not be valid to assume from this that spending 6 hours on homework would be likely to generate 12 BTC/BIF/BBIT passes.*

Correlation

- ▶ Correlation means association - more precisely *it is a measure of the extent to which two variables are related.*
- ▶ Correlation studies are described by the **correlation coefficient**: *A correlation coefficient is a statistic that reflects the degree to which two variables are related. It will always be somewhere between -1 and +1. It indicates the direction and the strength of the relationship.*
 1. If an **increase in one variable tends to be associated with an increase in the other** then this is known as a **positive correlation**. *E.g: height and weight. Taller people tend to be heavier.*
 2. If an **increase in one variable tends to be associated with a decrease in the other** then this is known as a **negative correlation**. *E.g: height above sea level and temperature. As you climb the mountain (increase in height) it gets colder (decrease in temperature).*
 3. When there is **no relationship between two variables** this is known as a **zero correlation**. *E.g: no relationship between the amount of tea drunk and level of intelligence.*

Advantages of Correlations

1. Correlation allows the researcher to **investigate naturally occurring variables that maybe unethical or impractical to test experimentally**. For example, it would be unethical to conduct an experiment on whether smoking causes lung cancer.
2. Correlation allows the researcher to **clearly and easily see if there is a relationship between variables**. This can then be displayed in a graphical form.

Pilot Study

- ▶ A pilot study is an initial run-through of the procedures to be used in an investigation; it involves selecting a few people and trying out the study on them. It is possible to save time, and in some cases, money, by identifying any flaws in the procedures designed by the researcher.
- ▶ A pilot study can help the researcher spot any ambiguities (i.e. unusual things) or confusion in the information given to participants or problems with the task devised.
- ▶ Sometimes the task is too hard, and the researcher may get a floor effect, because none of the participants can score at all or can complete the task – all performances are low. The opposite effect is a ceiling effect, when the task is so easy that all achieve virtually full marks or top performances and are “hitting the ceiling”.

Example Question

- Every year, all 15 year-old school students across the country complete a 2-week *Work Experience Programme* towards the end of the school year. Each student spends two weeks working for an employer who has volunteered to offer internship. The programme is intended to help the students make career and study choices and to prepare them for the world of work. However, the government is concerned that the programme is not achieving its aims. Recent news stories have highlighted complaints from the students and their parents about the range and quality of placements, and from employers about the support provided for them and for the students.
- The government has commissioned your research company to find out how the Work Experience Programme could be made more effective in achieving the above objectives. This research will involve gathering information from the students and employers along with parents and school staff.
- Before commencing with a national programme of research, your research company intends to conduct **A PILOT STUDY** at six schools in different regions of the country, using both qualitative and quantitative research. It hopes that information gathered during this initial study will help inform the national study. The schools involved have agreed to participate in the research.

- b) Your company has decided to conduct the qualitative phase of the research first. It intends to hold qualitative interviews and questionnaires with groups of **students** and **groups of staff** at each school, and to conduct telephone depth interviews with a number of **parents** and **employers** in each of the selected areas. Identify *the ethical issues you need to consider* when recruiting each of the groups in the sample.

GROUP	ETHICAL ISSUES TO CONSIDER
STUDENTS	<ul style="list-style-type: none"> The requirements for conducting research with under 18s, in particular <i>the need for informed consent from parents</i> as well as students. The <i>data protection issues</i> relating to the use of school databases for access to personal information; therefore ask School to send letter to parents asking for permission and response.
SCHOOL STAFF	<ul style="list-style-type: none"> <i>Data protection issues</i>: Current staff school email addresses can be used – but not personal ones. The company can email staff using staff email or put a notice in staff room?
PARENTS	<ul style="list-style-type: none"> <i>Data protection issues</i>: Since the company cannot access the school database for the parents contacts, the Invitation letter should come from school.
EMPLOYERS	<ul style="list-style-type: none"> <i>Data protection issues</i>: Since the company cannot access the school database for the employers contacts, then the research company needs to get an Invitation directly from school asking for permission to contact the employers

- a) Identify and explain *benefits that might be gained from conducting this pilot study* prior to roll-out of the full national study. Illustrate your answer with examples.

Potential benefits include:

- the opportunity to identify issues/ areas which can be included in the final study.*
- the chance to pilot the data collection instruments (e.g. questionnaire)*
- opportunity to pilot the sampling method and recruitment processes*
- opportunity to plan for the full project from a timing perspective*
- the opportunity to generate hypotheses which can be tested at the next stage*
- the chance to identify possible problems and how to overcome them – e.g. unforeseen issues which prevent groups from participating; bad times to conduct the research etc.*
- establish vocabulary appropriate for the target populations*
- opportunity to develop a more closed-ended questionnaire for the wider study, resulting in greater cost-efficiency for the quant stage*

Content Analysis

- Content analysis is a technique *for analysing qualitative data* of various kinds.
- Data can be *placed into categories and counted* (quantitative) *or can be analysed in themes* (qualitative).

► Researchers quantify (i.e. count) and analyze (i.e. examine) the presence, meanings and relationships of words and concepts, then make inferences about the messages within the media, the writer(s), the audience, and even the culture and time of which these are a part.

► To conduct a content analysis on any such media, the media is coded or broken down, into manageable categories on a variety of levels - word, word sense, phrase, sentence, or theme - and then examined.

Considerations when choosing a research method

- Validity** – The concept of validity was formulated by Kelly (1927) who stated that *a test is valid if it measures what it claims to measure*. For example a test of intelligence should measure intelligence and not something else (such as memory).
- TYPES OF VALIDITY: Internal and External**
 - A distinction can be made between internal and external validity.
 - These types of validity are relevant to evaluating the validity of a research study.
- Internal validity** refers to *whether the effects observed in a study are due to the manipulation of the independent variable and not some other factor*. In-other-words there is a causal relationship between the independent and dependent variable.
 - Internal validity can be improved by:
 - controlling** extraneous variables,
 - using** standardized instructions, and
 - eliminating** demand characteristics and experimenter effects.

- ▶ **External validity** refers to the **extent to which the results of a study can be generalized to other settings** (ecological validity), **other people** (population validity) and **over time** (historical validity).

- ▶ External validity can be improved by:

1. setting experiments in a **more natural** setting and
2. using **random sampling** to select participants.

- ▶ There are **two types of reliability** – internal and external reliability.

1. Internal reliability **assesses the consistency of results across items within a test**.
2. External reliability refers to **the extent to which a measure varies from one use to another**.

2. **Reliability** – **must provide data with consistent results, especially if the study is repeated**.

Reliability refers to the **consistency of a study/test** (or how dependable it is).

If it is repeated and similar results are obtained, then it can be said to be reliable.

- ▶ **If findings from research are replicated consistently they are reliable.**
- ▶ A correlation coefficient can be used to assess the degree of reliability. *If a test is reliable it should show a high positive correlation.*
- ▶ Of course, **it is unlikely the exact same results will be obtained each time** as participants and situations vary, **but a strong positive correlation between the results of the same test indicates reliability**.

3. **Appropriateness** – in context of objectives.
4. **Amount of data** – must provide enough quality data for sufficient analysis.
5. **Flexibility** – should match the flexibility you require in terms of informational needs.
6. **Time constraints** – should allow you to gather data, analyse it, interpret findings and write a report in the given time frame.
7. **Cost** – should not cost you more than you can afford.
8. **Potential errors** – you should exhaust all possible sources of error with view to minimize them.
9. **Researcher's ability** – should be within one's ability to complete.