# QUANTITATIVE SOCIAL RESEARCH

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- ▶ Quantitative vs Qualitative Research
- ▶ Research topic, question and objective
- ▶ Literature Review
- ▶ Theoretical Framework
- ▶ Hypotheses
- ▶ Measurement Scales
- ▶ Questionnaire
- ▶ Sampling methods

# WHAT IS SOCIAL RESEARCH?

▶ It is defined as a systematic and logical pursuit made by human beings to find out knowledge from any "phenomenon or problem or relationship".

▶ Investigates human behavior - the observer's biases and emotions have a strong tendency to play a role which interferes in the observed reality – opposite from natural science research.

▶ The success of the research primarily depends upon whether we have opted for the right kind of methodology to investigate the issue in hand – systematic process.

▶ It includes a group of diverse academic disciplines including history, sociology, political **science**, anthropology, law, geography, economics, bsuiness and education.

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# QUANTITATIVE RESEARCH APPROACH

▶ quantitative social research seeks to establish contingent relationships between variables - variable centred

▶ It is used to quantify the problem by way of generating numerical data or data that can be transformed into usable statistics.

▶ It is used to quantify attitudes, opinions, behaviors, and other defined variables – and generalize results from a larger sample population.

▶ Look at connections, relations or comparisons between variables.

▶ Quantitative data collection methods are much more structured than Qualitative data collection methods.

  ▶ include various forms of surveys – online surveys, paper surveys, mobile surveys, face-to-face interviews, telephone interviews, longitudinal studies, website interceptors, online polls, and systematic observations -primary data

  ▶ Annual reports, financial databases (e.g. Bloomberg)- secondary data

# QUALITATIVE RESEARCH

▶ Qualitative research seeks to reveal subjective meanings – meaning oriented.

▶ It is used to study the central phenomenon/situation you plan to explore (tell in your question what you are going to describe, explore, generate, discover, understand) – go deeper

▶ Qualitative data collection methods vary using unstructured or semi-structured techniques.

▶ Some common methods include focus groups (group discussions), individual interviews, and participation/observations, review of documents.

▶ The sample size is typically small.

▶ Avoid the use of quantitative words such as relate, influence, effect, cause.

# Deductive and Inductive Reasoning in Research
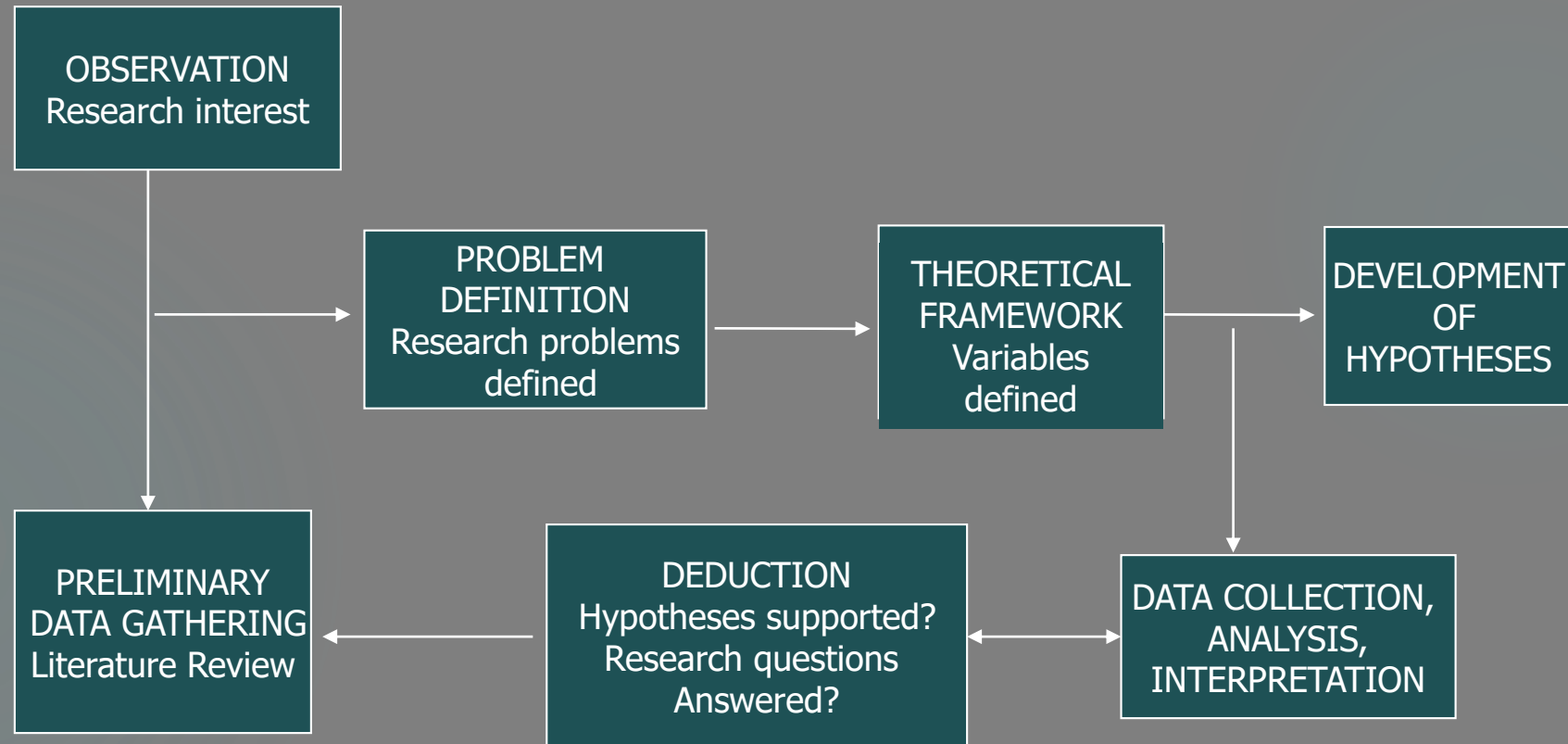


Testing theory (Quantitative research)

Generation of new theory (Qualitative research)
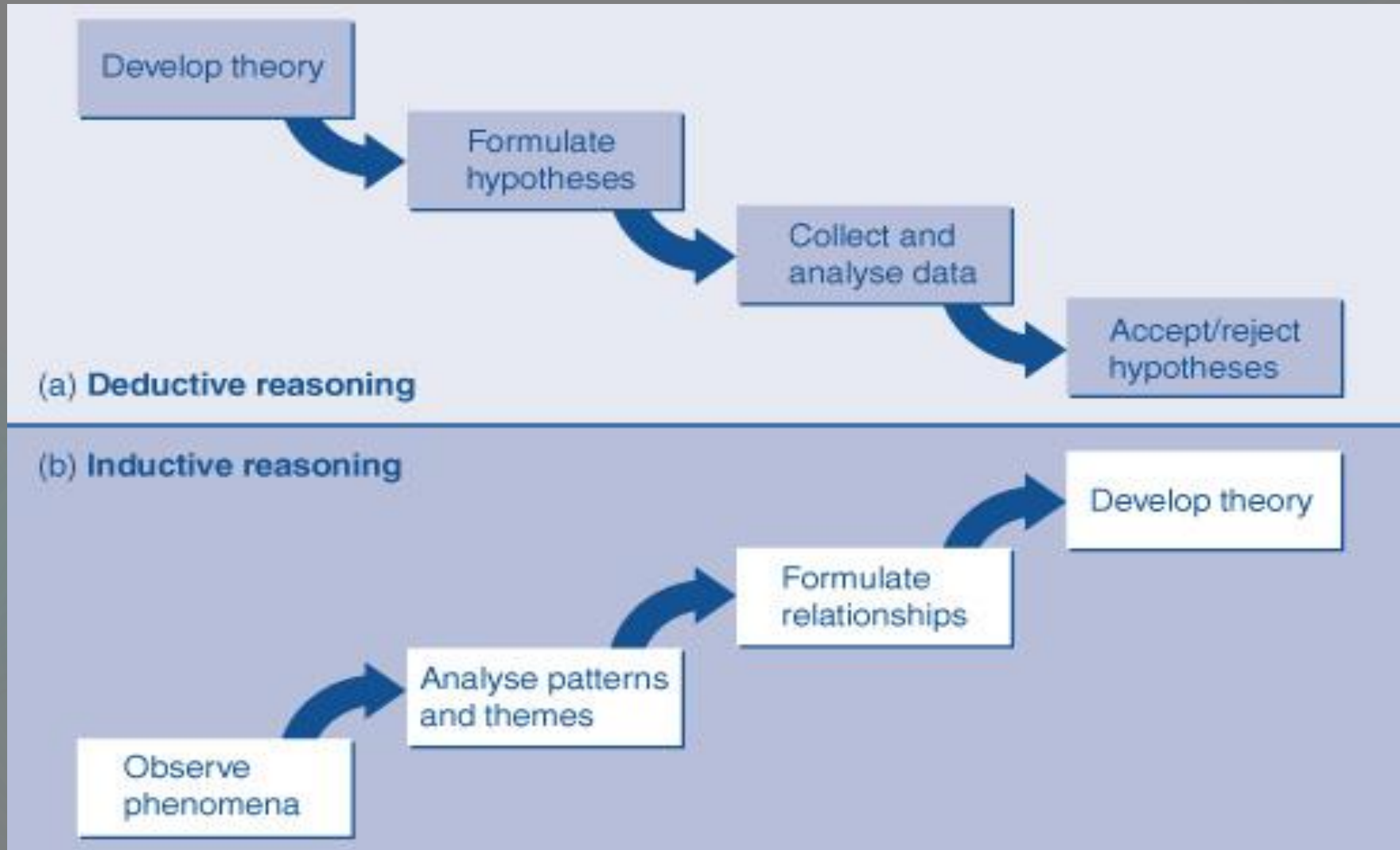
# Mixed Methods Research

▶ Mixed methods research is a methodology for conducting research that involves collecting, analysing and integrating <u>quantitative</u> (e.g., experiments, surveys) and <u>qualitative</u> (e.g., focus groups, interviews) research.

▶ By mixing both quantitative and qualitative research and data, the researcher gains in breadth and depth of understanding and corroboration, while offsetting the weaknesses inherent to using each approach by itself.

# BASIC QUANTITATIVE RESEARCH PROCESS



```
┌─────────────────────┐
│ OBSERVATION         │
│ Research interest   │
└─────────────────────┘
```

OBSERVATION
Research interest

PROBLEM DEFINITION
Research problems defined

THEORETICAL FRAMEWORK
Variables defined

DEVELOPMENT OF HYPOTHESES

PRELIMINARY DATA GATHERING
Literature Review

DEDUCTION
Hypotheses supported?
Research questions Answered?

DATA COLLECTION, ANALYSIS, INTERPRETATION

# Generating Research Ideas

Examining own strengths and interests
- ▶ Choose a topic you already have knowledge

Looking at past project titles
- ▶ Scan a list of past project titles for anything that may capture your attention
- ▶ Scan through actual projects for ideas

Discussion
- ▶ Get ideas from various sources, including colleagues, friends and lecturers
- ▶ Talk to practitioners and professional groups

# Generating Research Ideas

## Searching the literature

- ☐ Literature of particular use for generating research ideas include

  - articles in academic and professional journals

  - reports

  - books

- ☐ Undertake preliminary search by going through lecture notes and course textbooks

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# From research area to research topics

▶ Identify the research area, then the topic within the area

**Examples**

▶ **Research area**

   ▶ youth suicide

▶ **Four possible research topics**

   ▶ Suicide rate among different groups

   ▶ Factors associated with the incidence of youth suicide

   ▶ Managing suicide behaviour among teenagers

   ▶ Youth culture and the meaning of suicide

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- Developing a topic is really about knowing how to ask questions.

- Research is about working to identify and then work on questions that need answering or problems that need solving.

- You can take your initial starting point –a very basic idea of what you might write about – and ask yourself: *What is it about this topic that interests me?*

- *That's* what you should write about. From there, you can begin to think about some questions you might be able to research and investigate further.

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# Research Problem

- It is a definite or clear expression [statement] about an area of concern, a condition to be improved upon, a difficulty to be eliminated, or a troubling question that exists in scholarly literature, in theory, or within existing practice that points to a need for meaningful understanding and deliberate investigation.

- The research problem establishes the means by which you must answer the "So What" question.

- The "So What" question requires a commitment on your part to not only show that you have researched the material, but that you have thoroughly considered its significance.

# What Makes a Research Problem Interesting?

▶ Novelty

  ▶ Is it new, or has it been done before? If it is not new, then why do it again?

▶ Significance

  ▶ Will solving the problem make a difference for anyone (except you)? Will anyone care?

  ▶ If you don't know, then you'd better find out!

▶ Context

  ▶ Perhaps you are studying an old problem in a new context, but what is special about this context?

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# What is a Research Question?

- A statement of what you wish to know about some situation or phenomena.

- A research question guides and centers your research.

- It should be clear and focused, as well as synthesize multiple sources to present your unique argument.

# From research topic to research questions

Research Area: youth suicide

Research topic: Factors associated with the incidence of youth suicide

General research question 1:
What is the relationship between family background factors and the incidence of youth suicide?

General research question 2:
What is the relationship between school experience factors and the incidence of youth suicide? Or How does school experience relate to the incidence of youth suicide?

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# RESEARCH QUESTIONS & RESEARCH OBJECTIVES

**RESEARCH QUESTIONS**

What is the relationship between family background factors and the incidence of youth suicide?

**RESEARCH OBJECTIVES**

The objective of this study is to examine several family background factors associated with incidence of youth suicide

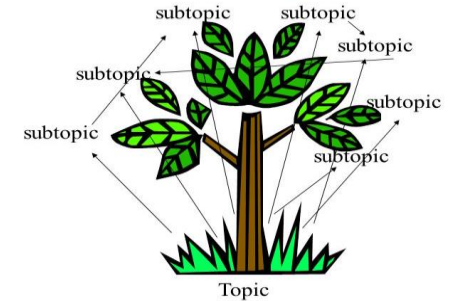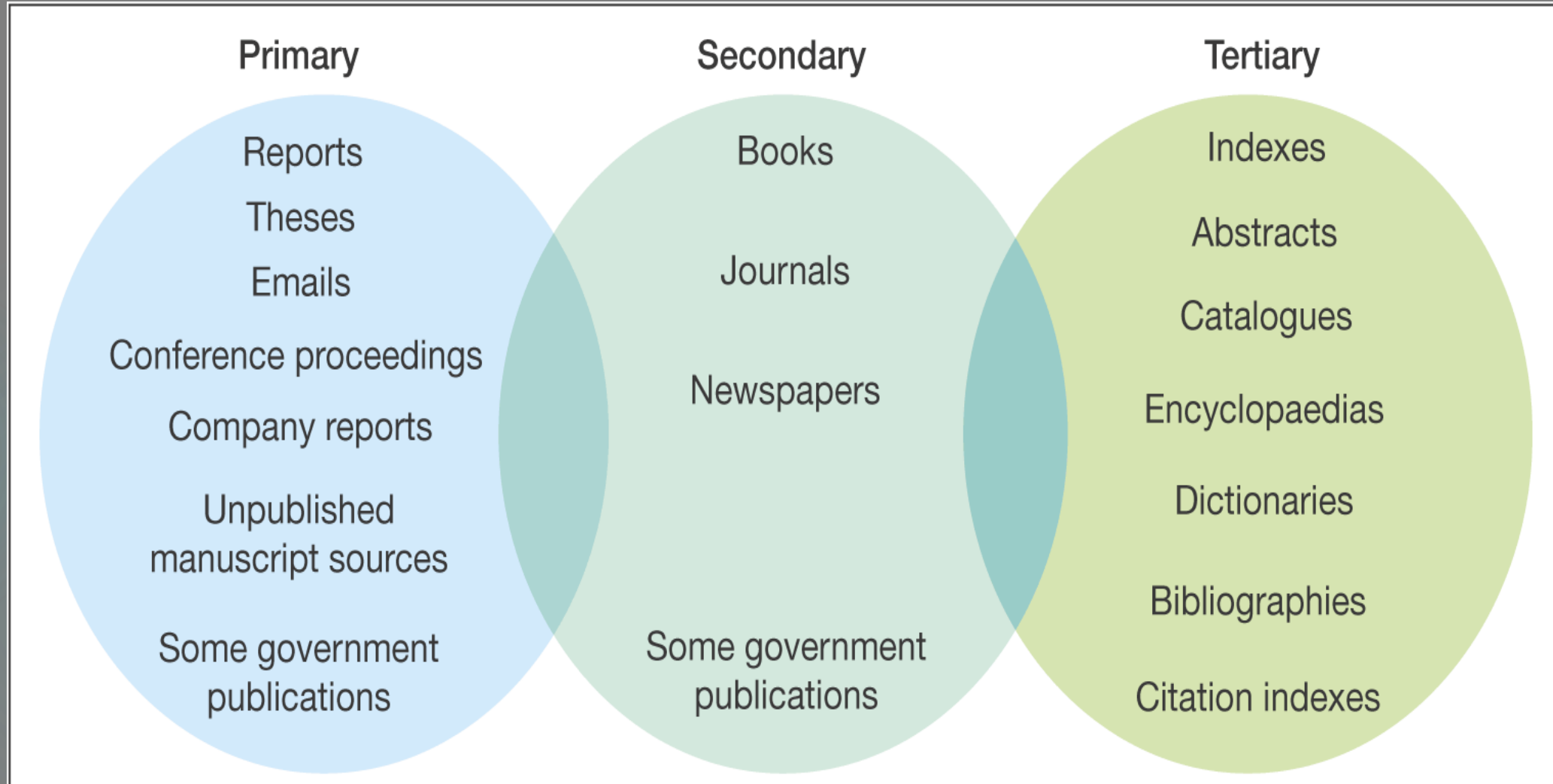Note: Research problem, research question and research objectives must be aligned.

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# CRITICAL REVIEW OF THE LITERATURE

- Important because you need to establish the research that has been published in your chosen area/topic.

- Things to remember when reviewing an article:
  - what its research question/objective, what are its findings.
  - how it relates to your research questions,
  - what is missing/gaps - research possibilities that have been overlooked.
  - avoid repeating work that has been done already.

# The Literature Review Process



Organizing the Literature Search: the Tree Diagram

1.  Start at a general level before narrowing down.

2.  Report the key findings/contents – meta review analysis

3.  Compare and contrast, and critically analyze.

4.  Highlight those aspects where your own research will provide fresh insights – identify and fill in the gaps.

5.  Make your own arguments – you need to be saying something (not just a descriptive list) that lead to your research question.

6.  Establish the theoretical framework.

| Primary | Secondary | Tertiary |
|---|---|---|
| Reports | Books | Indexes |
| Theses | | Abstracts |
| Emails | Journals | Catalogues |
| Conference proceedings | | Encyclopaedias |
| Company reports | Newspapers | Dictionaries |
| Unpublished manuscript sources | | Bibliographies |
| Some government publications | Some government publications | Citation indexes |

| Author(s) | Topic area | Sampling | Type of analysis(es) | Key findings |
|---|---|---|---|---|
| Samaraweera and Gelb (2015)- *JPSSM* | Behavior control (BHC) and output control (OTC) | • 34 Articles<br>• 39 Samples<br>• 6,678 Salespeople | • Hierarchical linear modeling (hlm)<br>• Structural model analysis | The manuscript examines the effect of BJC and OTC on salesperson's revenue generation. Study findings show a strong correlation between BHC and JOTC. The manuscript also found that both control mechanisms have a positive impact on revenue. |
| Goad & Jaramillo (2014) – *JPSSM* | Selling orientation (SO) and customer orientation (CO) | • 78 Articles<br>• Unknown samples<br>• 126,970 Salespeople | • Random-effects mean correlations<br>• Structural model analysis<br>• Moderation analysis | The authors seek to better understand the antecedents and outcomes of SO and CO. Findings show that while learning and performance orientations (LO and PO) both increase CO, only PO increases CO while LO decreases SO. Further, they find both CO and SO increase adaptive selling; however, only CO has a direct effect on performance. They do find, however, that the SO-performance relationship is moderated by customer type (business vs. consumer) |
| Zablah et al. (2012) – *JM* | CO | • 291 Articles<br>• 323 Samples<br>• 99,641 Frontline employees (FLEs) | • Random-effects mean correlations<br>• Structural model analysis<br>• Moderation analysis | The authors test competing theories regarding the nature of frontline employees' CO as either an antecedent or outcome of their role ambiguity, role conflict, satisfaction, and organizational commitment. Results support CO as an antecedent and show its effect on these variables to be contingent on their workload (+) and need for customer persuasion (−). |
| Evans et al. (2012) - *JPSSM* | Salesperson ethics, job attitudes, and organizational outcomes | • 66 Samples<br>• 8,424 Salespeople<br>• 1,866 Customers | • Random-effects mean | The manuscript evaluates the effects of ethics perceptions on organizational outcomes. Research findings show that ethics affects the organization through several relationship mediators involving the customer and the salesperson. Ethical climate has a positive impact on the salesperson, the customer, and the organization. |
| Verbeke, Dietz, & Verwaal (2011) – *JAMS* | Drivers of salesperson performance | • 268 Articles<br>• 292 Samples<br>• 79,747 Salespeople | • Reliability-adjusted, sample-size weighted mean correlations<br>• Structural model analysis<br>• Moderation analysis | Understanding salesperson performance is driven by a multitude of factors; the authors provide a meta-analytic examination of 18 antecedents of performance as well as eight moderating conditions related to the measurement method, research context, and type of sales. Findings show significant effects on performance for selling knowledge, adaptiveness, role ambiguity, cognitive aptitude, and work engagement. Further, these effects are moderated by the three categories of contextual conditions. |
| Albers, Mantrala, and Sridhar (2010) – *JMR* | Personal selling elasticities | • 75 Articles<br>• 88 Samples<br>• 506 Elasticity estimates | • Method bias-corrected mean elasticity<br>• Hierarchical linear modeling<br>• Moderation analysis | The authors provide clarity on the effect of changes in personal selling expenditures on changes in outcome performance. Findings show an elasticity value of .31, which supports personal selling's status as an important piece of the marketing mix. This effect is contingent on both product-related (e.g., life-cycle stage) and methodological-related (e.g., type of outcome measure) factors. |

**A theoretical framework is analogous to the frame of the house.**

*Just as the foundation supports a house, a theoretical framework provides a rationale for predictions about the relationships among variables of a research study*

# Conceptual Framework

- This consists of concepts that are placed within a logical and sequential design.

- represents less formal structure and used for studies in which existing theory is inapplicable or insufficient.

- based on specific concepts and propositions, derived from empirical observation and intuition.

- may deduce theories from a conceptual framework.

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**Theoretical Framework and Conceptual Framework may be represented as models:**

- A model is a symbolic representation that helps the researcher to express abstract concepts and relationships easily, using minimal words.

- A model can be represented schematically or mathematically.

  - **Schematic model** - conveys concepts and propositions through **the use of boxes, arrows or other symbols.**

  - **Mathematical or statistical model** - conveys concepts and propositions through the **use of letters, number and mathematical symbols.**
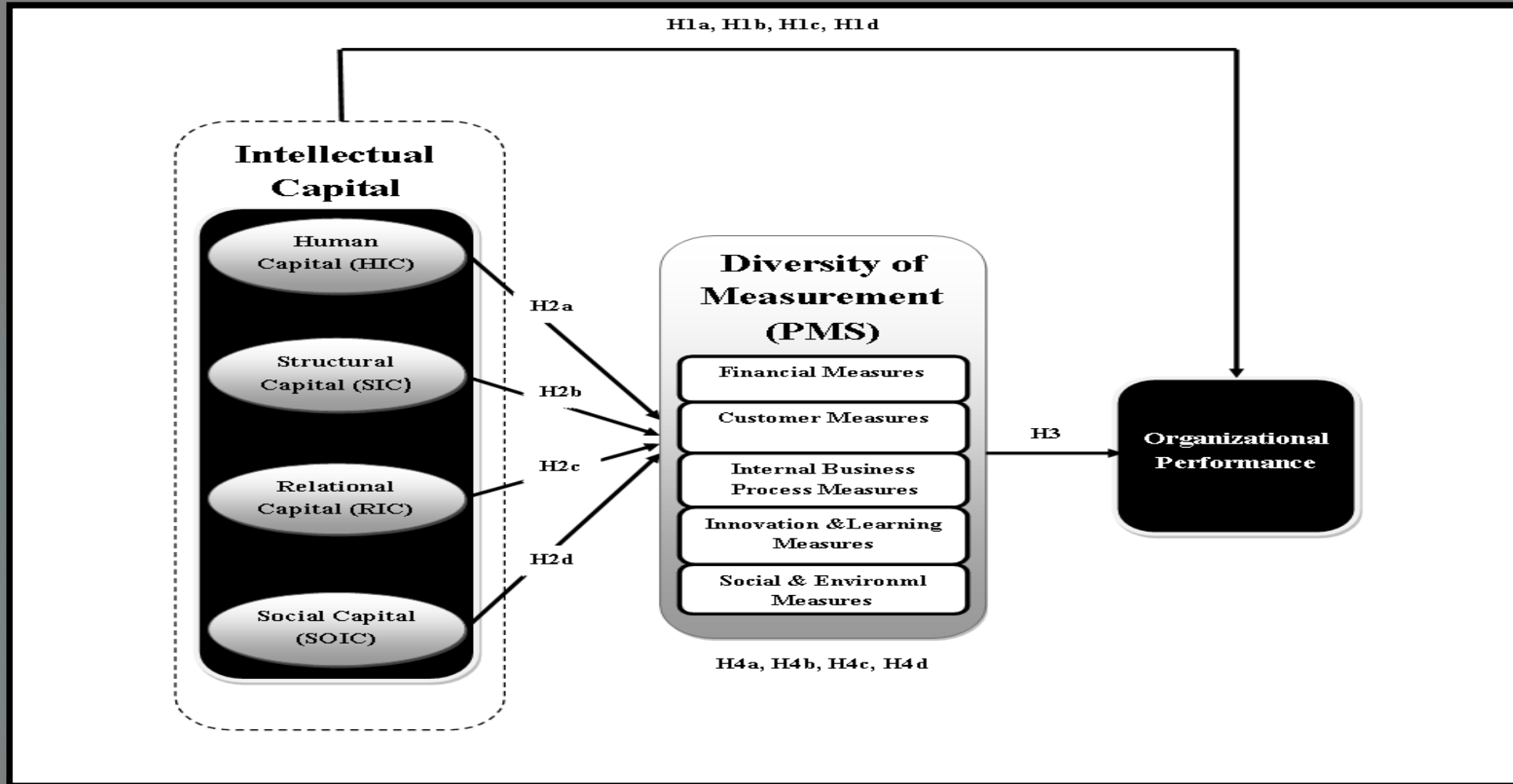
# Writing a Hypothesis

1.  A hypothesis is a clear statement of what is intended to be investigated.

2.  What you expect the research to turn out.

3.  It is a possible answer to your research question.

4.  Must be testable.

- A **null hypothesis ($H_o$ or H-zero)** is a statement, in which there is no relationship between two variables.

  - The null hypothesis is what we attempt to find evidence against in our hypothesis test.

  - It is what the researcher tries to disprove/reject.

  - expects no difference or effect.

- An **alternative hypothesis ($H_1$ or H-one)** is statement in which there is some statistical significance between two measured phenomenon.

- If the null hypothesis is rejected, then we accept the alternative hypothesis. If the null hypothesis is not rejected, then we do not accept the alternative hypothesis.

- It is what the researcher tries to prove.

- expects some difference or effect.

# Examples of $H_0$ and $H_A$

**Null hypothesis examples:**

- There is *no* extrasensory perception.
- There is *no difference* between the mean pulse rates of men and women.
- There is *no relationship* between exercise intensity and the resulting aerobic benefit.

**Alternative hypotheses examples:**

- There is extrasensory perception.
- Men have lower mean pulse rates than women do.
- Increasing exercise intensity increases the resulting aerobic benefit.

# Research Methods

▶ Research method pertains to all those methods, which a researcher employs to undertake research process, to solve the given problem.

▶ It encompasses both qualitative and quantitative method of collecting data and information, such as survey, case study, interview, questionnaire, observation, etc.

# How Variables are Measured

- Objective data
  - e.g. weight, absenteeism, temperature, financial performance data
    - Use appropriate measuring instruments

- Subjective data notion
  - e.g. feelings, attitudes, perceptions

# **Operational Definition**

❑ is a statement of the specific dimensions and elements through which a concept will become measurable, i.e. it describes its observable characteristics in order to be able to measure the concept.

# **Measurement Scales**

The end-product of operationalising concepts is a variable that can be measured using a <span style="color:yellow">scale</span> by which individuals are distinguished on how they differ from one another

4 types of basic measurement scales:

(in the order of the degree of sophistication)

- Nominal Scale
- Ordinal Scale
- Interval Scale
- Ratio Scale

# Nominal Scale

- Allows us to distinguish groups by splitting data into mutually exclusive (no overlap) categories.

- Used for labeling variables, without any quantitative value

  o Eg, gender: male, female strategy types

# Ordinal Scale

- Ranks data in some order that denote differences among categories;

  o e.g. exercising for 20 minutes is good, for 30 minutes is better, for 40 minutes is best.

- Does not give any indication for the magnitude of the differences among the ranks – how much better it is?

- Ordinal scales are typically measures of non-numeric concepts like satisfaction, happiness, discomfort, etc

GOOD BETTER BEST

2nd    1st    3rd

**How do you feel today?**
- 1 – Very Unhappy
- 2 – Unhappy
- 3 – OK
- 4 – Happy
- 5 – Very Happy

**How satisfied are you with our service?**
- 1 – Very Unsatisfied
- 2 – Somewhat Unsatisfied
- 3 – Neutral
- 4 – Somewhat Satisfied
- 5 – Very Satisfied

# Interval Scale

- Allow us to measure a sets data on a continuum scale using numeric scales in which we know not only the order, but also the exact differences between the values.

- interval scales don't have a "true zero." (e.g. no temperature)
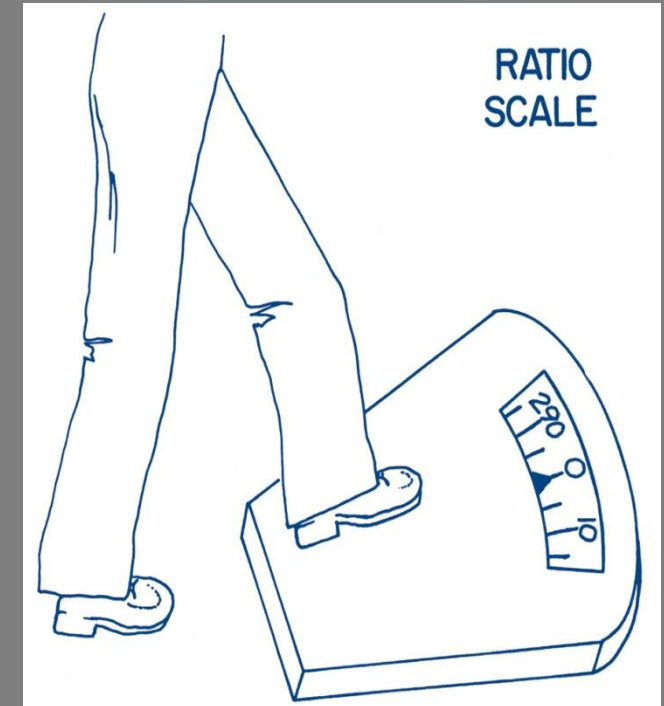
- e.g. Celsius temperature
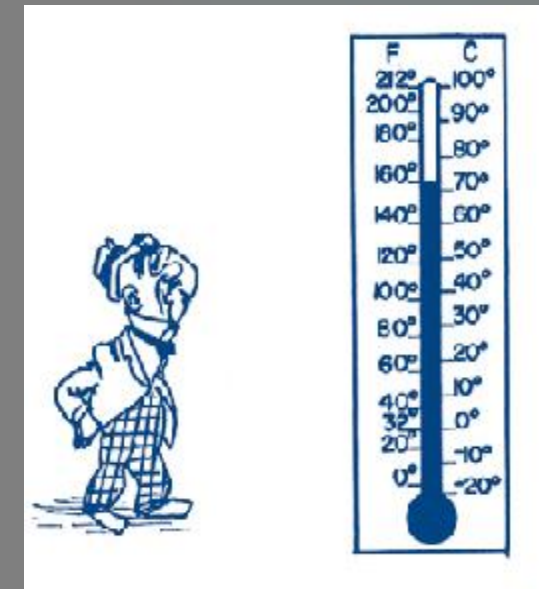
# Ratio Scale

▶ tell us about the order, the exact value between units, AND have an absolute zero.

▶ the *ability to calculate ratios* since a "true zero" can be defined.

▶ Indicates proportion of differences between two points;

```
|_____|_____|
0                5                10
```

▶ e.g. height/weight

Ten is twice as big as five


RATIO SCALE

# CATEGORICAL AND CONTINUOUS VARIABLES

**Categorical variables** denote those measured on a nominal scale representing different groups or categories.

e.g.    (different) football teams

(types of) vegetables

Categorical variables lend themselves to descriptive statistics.

**Continuous variables** denote those measured on a continuum — i.e. on an interval or ratio scale.

e.g.    (extent of) risk taking

distance (run in a race)

Continuous variables lend themselves to descriptive and inferential statistics.

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# Questionnaires

- Questionnaires is the most widely used data collection techniques within the survey strategy in business and management research.

- Each person is asked to respond to the same set of questions in a predetermined order.
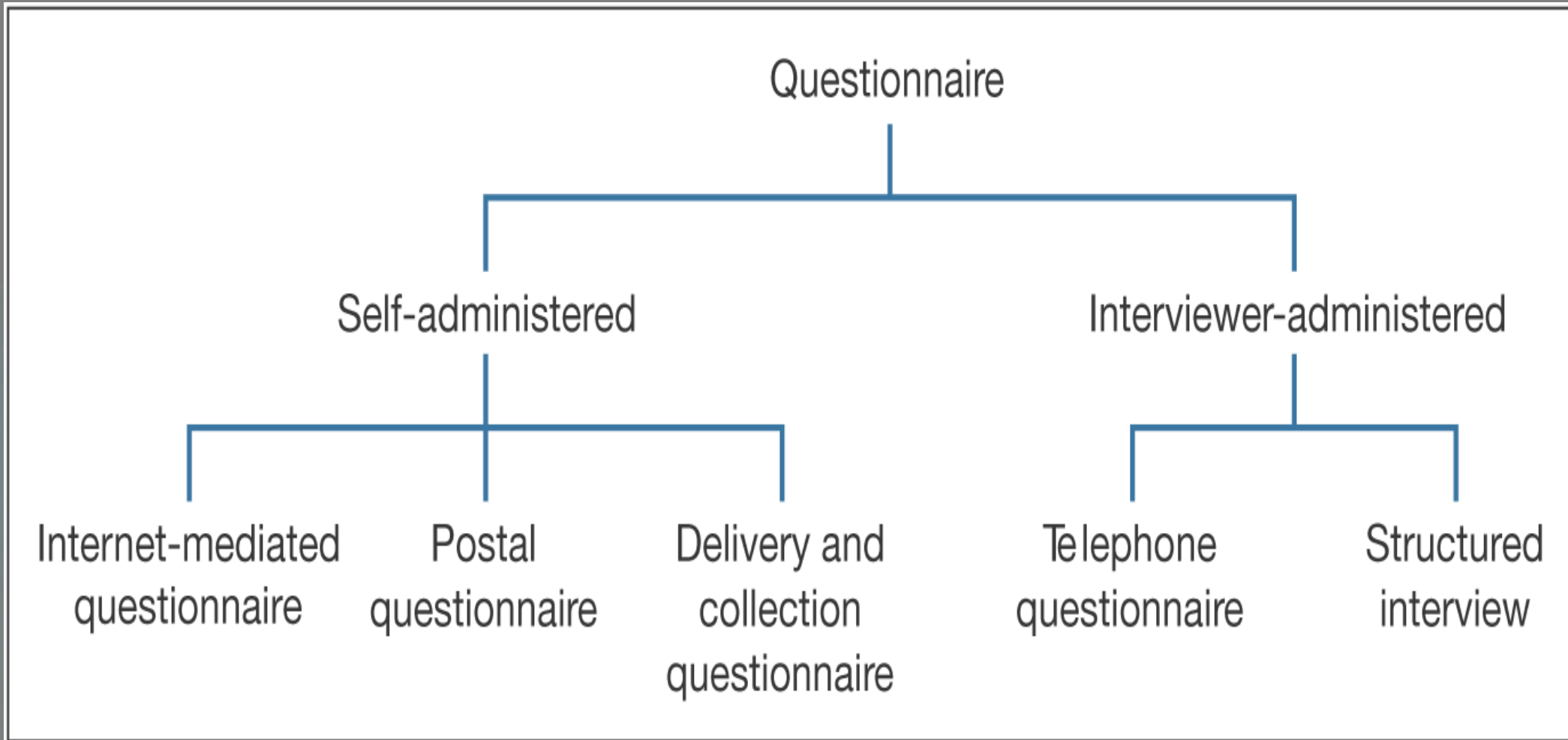
▶ A questionnaire that has been designed specifically to be completed by a respondent without intervention of the researchers (e.g. an interviewer) collecting the data.

▶ offer the following advantages:

   ▶ no interviewer bias;

   ▶ less time spent on administration;

   ▶ easier questioning of larger numbers of people;

   ▶ more leisurely, which may permit more careful responding;

   ▶ perceived as more anonymous and may therefore yield more accurate data on sensitive issues.

# Interviewer-administered questionnaires

- Questionnaires can be administered by an interviewer.
- Offer the following advantages:
  - respondent literacy not necessary;
  - questions and responses can be clarified;
  - allows probing for additional information;
  - complex and open-ended questions are possible;
  - answering of questionnaire by intended person is assured;
  - fewer "blanks";
  - participation potentially increased by personal contact.

# Designing Questions

▶ Adopt or Adapt questions used in other questionnaires;

In the absence of existing questionnaires from any earlier study

▶ Develop your own questions

# **Open-ended Question**

▶ Allow respondents to give answers in their own way.

▶ Widely used in in-depth or semi-structured interviews

▶ When detailed answer is required

▶ To find out the uppermost in the respondents' mind

▶ Usually used in exploratory study

# Closed-ended questions

▶ Also known as *forced-choice questions*

▶ Provides a number of alternative answers for respondent to choose;

▶ Quicker and easier to answer;

▶ Responses are easier to compare

- ☐ List Questions

  e.g. What is your religion?

  ☐ Muslim ☐ Christian ☐ Buddhist ☐ Hindu ☐ other

- ☐ Category questions

  e.g. How often do you visit this shopping centre?

  ☐ first visit ☐ once a week ☐ less often

  ☐ twice or more a week ☐ less than fortnightly to once a month

- ☐ Ranking questions

  Please rank each of the following attribute in order of importance when buying a new car ( 1 most important, the next 2, and so on).

  ☐ boot size ☐ depreciation ☐ safety

  ☐ fuel economy ☐ price ☐ acceleration

# Rating and Ranking Scales

Scaling is a procedure for assigning numbers (or symbol) to a property of object in order to convey some of the characteristics of numbers to the properties in question

**Two main categories of response scale:**

☐ Rating Scales

*have several response categories and are used to elicit responses with regard to the object, event or person studied i.e. without comparing to another object.*

☐ Ranking Scales

*make comparisons between or among objects, events or persons, and elicit the preferred choices and ranking among them.*

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# Rating Scales

▶ Most commonly used:

  ▶ Dichotomous Scale (2 categories)

  ▶ Semantic Differential Scale

  ▶ Category Scale (nominal scale)

  ▶ Likert Scale

Used to elicit a *Yes* or *No* answer,

Eg: *Do you own a car?*          Yes          No

# Semantic Differential Scale

measures the psychological meanings to indicate attitude towards a particular individual, object  or event using a semantic space

Responsive   -  -  -  -  -  -  -  Unresponsive

Good      -  -  -  -  -  -  -  Bad

Courageous  -  -  -  -  -  -  -  Timid

# Category Scales – more than 2 categories

e.g. : Which type of house do you own:

Terrace _____ Semi-detach _____ Bungalow, _____ Others

Likert Scale - **Likert scales** are always **ordinal**.

Use variation of the summated rating scale to express either favourable or unfavourable attitude towards the subject of interest
Eg: *Indicate the extent to which you agree or disagree with the following         statements*:

|  | Strongly disagree | Disagree | Neither agree nor disagree | Agree | Strong agree |
|---|---|---|---|---|---|
|  | 1 | 2 | 3 | 4 | 5 |
| My work is very interesting |  |  |  |  |  |
| Life without my work would be dull |  |  |  |  |  |

# Ranking Scales

▶ **Comparative Scale**
provides a benchmark to assess attitude towards an object against standard.

*E.g: In a volatile financial environment, compared with shares, how useful is it to invest in government bonds?*

| More useful | | About the same | | Less useful |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |

# Forced Choice

Eg:   *Rank your preferences among the following magazines, 1 being your preferred choice and 5 being your least preferred:*

Australian Financial Review       ___

Business Review Weekly            ___

Playboy                           ___

The Economist                     ___

Time                              ___

# Question Wording

▶ Need careful consideration to ensure validity of responses

▶ Within the context rather than in abstract to ensure that they are not misread

▶ Translating questions into another language requires care to ensure the questions have the same meaning to all respondents.

▶ Back translation are normally required for questionnaire translated into another language

# Designing the survey form

- **Order and flow of questions** should be logical to the respondents rather than the order of data requirement;

- The **layout** should be attractive to encourage respondents to fill in and return the survey form;

- Avoid using **long questionnaire** if possible since it will reduce response rate

- Very **short questionnaire** will indicate insignificant of research.

- Close the questionnaire **thanking the respondent** for completing the questionnaire.

# Cover Letter

▶ Self administered questionnaire should be accompanied by a cover letter that explain clearly and concisely the purpose of the survey.

▶ It is normally what the first thing that a respondent look at.

▶ Sometimes might affect the response rate.

# Selecting Samples

# **Definitions**

▶ Sample – subgroup of a large population

▶ Population – full set of cases from which a sample is taken.

▶ Sampling Frame - a list of all those within a population who can be sampled – a target population. Eg: List of PLCs, FMM directory, people who live in Yogyakarta.

▶ Note: The sample must be representative of the population so that the results of the study can be generalized to the population as a whole.

# Population, sample and individual cases
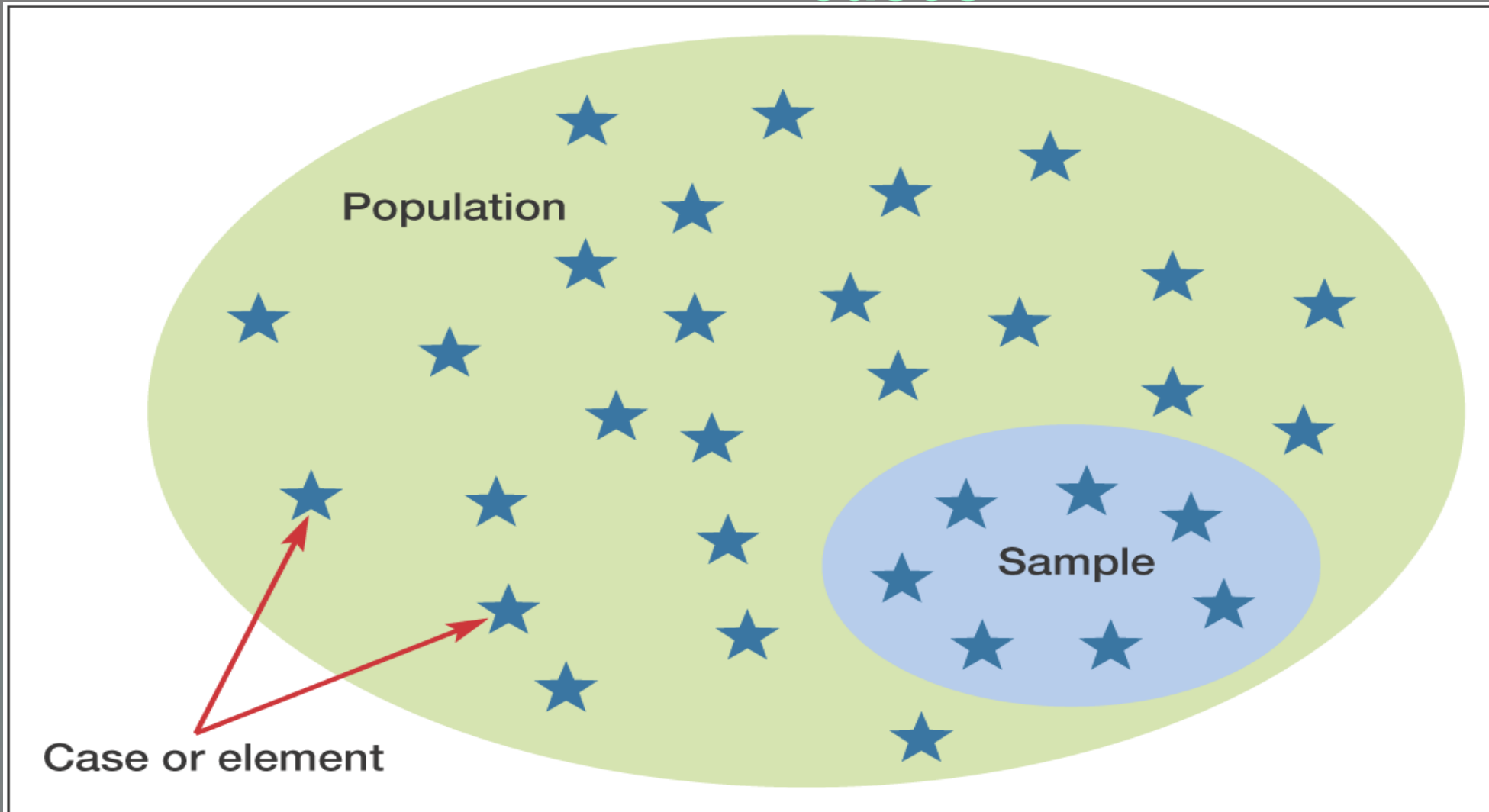
# Why the Need to Sample?

▶ Impractical to survey the entire population

▶ Budget constraints

▶ Time constraints

▶ Results are needed quickly

TYPES OF SAMPLING

SAMPLING

PROBABILITY

NON-PROBABILITY

# Probability Sampling

▶ Probability sampling uses randomization (chance method) and takes steps to ensure all members of a population have a chance of being selected.

▶ utilizes some form of **random** selection.

Five main techniques:

1. Simple random

2. Systematic

3. Stratified random

4. Cluster

5. Multi-stage

# Simple random

- Involves selecting the sample at random from the sampling frame.

- A sample is chosen in such a way that every set of individuals (objects) has an equal chance to be in the selected sample.

How it is done:

▶ Number each of the cases in the sampling frame with a unique number

▶ Select cases using random numbers until the actual sample size is reached

▶ E.g. put 100 numbered bingo balls into a bowl (this is the population N). Select 10 balls from the bowl without looking (this is your sample n). Note that it's important *not to look* as you could (unknowingly) bias the sample.

# Systematic sampling

Involves selecting the sample at regular intervals from the sampling frame

How it is done:

▶ Number each of the cases in the sampling frame with a unique number

▶ Select the first case using a random number

▶ E.g. every 10th person on a list

# Stratified random sampling

Divide the population into subgroups (strata) based on one or a number of attributes

How it is done:

▶ Choose the stratification variable or variables

▶ Divide the sampling frame into the discrete strata

▶ Number each of the cases within each stratum with a unique number

▶ Select the sample using either simple random or systematic sampling

# Cluster sampling

Similar to stratified sampling, in which you divide the population into discrete groups prior to sampling. The groups are known as clusters and can be based on any naturally occurring grouping.

How it is done:

▶ Choose the cluster grouping

▶ Number each of the clusters with a unique number

▶ Clusters are randomly selected and all members of the cluster selected are sampled

# Multi-stage sampling

▶ a combination of one or more of the other methods

▶ This method is rather complex.

# Non-probability Sampling

❑ Does not rely on the use of randomization techniques to select members.

❑ It is not known that which individual from the population will be selected as a **sample**

❑ This is typically done in studies where randomization is not possible in order to obtain a representative sample.

❑ When total list population not available

❑ Bias is more of a concern with this type of sampling.

Four main techniques:

1. Convenience sampling
2. Purposive sampling
3. Snowball sampling
4. Quota sampling

# **Convenience sampling**

Select those cases that are easiest to obtain for your sample – based on availability

How it is done:

▶ Sample selection process is continued until your required sample size is met

▶ Collect data from those who respond

Impacts:

▶ Likelihood of sample being representative is very low

# Purposive sampling

▶ It enables you to use judgement to select cases that will best enable you to answer your research question(s) and to meet your objectives.

▶ Participants are selected according to the needs of the study

▶ Those who do not meet the profile are rejected.

▶ For example, you may be conducting a study on why high school students choose community college over university. You might canvas high school students and your first question would be "Are you planning to attend college?" People who answer "No," would be excluded from the study.

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# Snowball sampling

- ▶ Used when it is difficult to identify members of the desired population
- ▶ members are sampled and then asked to help identify other members to sample and this process continues until

How it is done:

- ▶ Make contact with one or two cases in the population
- ▶ Ask these cases to identify further cases
- ▶ Ask these new cases to identify further new cases
- ▶ Stop when either no new cases are given or enough samples are collected

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# Quota sampling

► It is entirely non-random and is normally used for interview surveys.

In quota sampling the selection of the sample is made by the interviewer, who has been given quotas to fill from specified sub-groups of the population.

For example, an interviewer may be told to sample 50 females between the age of 45 and 60.

# Research in Natural Sciences Vs. Social Sciences

- You may be rather surprised to know that the most of social scientists are preoccupied with research methodologies to the extent that it sounds a bit obsessive. However most of the natural scientists are not at all required to study any such course on research methodology and they do not seem to be bothered about it at all. The reasons are rooted in different nature of the disciplines.

- In natural sciences there is a clear cut separation of the observer and observed reality which is why the observer does not interfere in what is going to be observed. The objectivity of the natural reality can be easily observed.

- However picture is altogether different when we enter into the domain of social sciences. There is hardly any separation between the reality under observation and the observer. Being a human being, the observer's biases and emotions have a strong tendency to play a role which interferes in the observed reality. Hence how to observe the objective facts of the reality has been a big question. Social scientists are still grappling with this issue of influence of observer on the objects and impact of such influence on the process of producing valid knowledge. Apart from this issue of subjectivity, social sciences have to face variety of ethical issues, and cultural relativism. You will study about these issues in subsequent subsections.

# Research Methodology

- Research Methodology, as its name suggest is the study of methods, so as to solve the research problem.

- It is the science of learning the way research should be performed systematically.

- It refers to the rigorous analysis of the methods applied in the stream of research, to ensure that the conclusions drawn are valid, reliable and credible too.

## DEDUCTIVE VS INDUCTIVE APPROACHES TO RESEARCH

| Deductive Approach | Inductive Approach |
| --- | --- |
| Deductive approach is aimed at testing theory | An inductive approach is concerned with the generation of new theory emerging from the data. |
| Usually begins with a hypothesis. | Usually uses research questions to narrow the scope of the study. |
| Emphasis is generally on causality | The aim is usually focused on exploring new phenomena or looking at previously researched phenomena from a different perspective. |
| Generally associated with **quantitative** research | generally associated with **qualitative** research. |

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