Research design and methods
Part II

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POST-GRADUATE ENROLMENT AND THROUGHPUT

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A place of quality,
a place to grow, from hope
to action through knowledge

From last week…

- Research methodology
  - Quantitative vs. Qualitative vs. Participatory/action research
- Research methods
  - Methods of sampling, data collection and data analysis
- Research design
  - Experimental, descriptive, exploratory

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RESEARCH DESIGN

- Logic of the inquiry
- Purpose of the inquiry
- Types of research design
- Directions of reasoning (logic)

QUANTITATIVE RESEARCH

- Is best suited to the **investigation of structure** rather than process
- Can answer “how many”, “what” and “where” questions
- Relies on **predetermined response categories** and **standardised data collection instruments**
- The standardised measurement and sampling procedures are intended to enhance the **validity** and **reliability** of observation (counting) and to facilitate **replication** studies

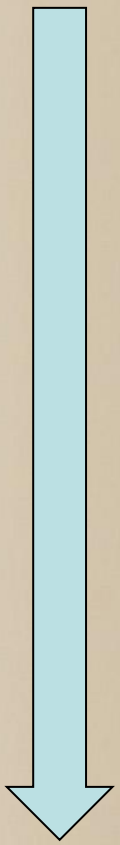
SAMPLING
IN QUANTITATIVE RESEARCH

- Aim for **generalisation to a larger (study) population**.
  - Sample size = large
  - Random sampling from study population is preferred when possible, where not possible systematic, stratified and cluster sampling methods may be used
  - Why?
- And **verification of theory**

DATA ANALYSIS IN QUANTITATIVE RESEARCH

I. Descriptive statistics

- Simple distribution (one variable)
- Bivariate relationships (2 variables., e.g. frequency distributions)
- More than 2 variables (tri/multivariate, e.g. multiple regression analysis)



Inferential statistics

Use probability theory:

- to test hypotheses
- to draw inferences as to whether results from a random sample hold true for a designated study population (generalisability)
- to test whether descriptive results are likely to be due to random factors or to a real relationship. It helps researchers decide whether a relationship really exists between different sets of statistical results

NEED TO KNOW - CONCEPTS

Statistical significance

- means that results are not likely to be due to chance factors – the probability of finding a relationship in the sample when there is none in the population. It tells the researcher whether the results are produced by random error in random sampling.
- Results an be statistically significant but theoretically meaningless or trivial. BEWARE OF THE STATISTICIAN!

Probability theory

- refers to a process that generates a mathematically random result – that is, the selection process operates in a truly random method and a researcher can calculate the probability of outcomes. It is a true random process in that each element has an equal probability of being selected.

STEPS IN DESIGNING A QUANTITATIVE STUDY

- Formulate a researchable question
- Review related literature
- State hypotheses
- Determine the variables to be studied
  - Identify dependent, independent, control and other variables
  - Determine how these variables will be operationalised
  - Determine level of measurement
- Determine research plan/method of data collection
- Define population
- Determine what instruments will be used to collect data
  - Pretest instruments
- Determine statistical tests to use

DATA COLLECTION IN QUANTITATIVE STUDIES

- Experimental
  - Simple post-test
  - Classic pre-test, post-test
  - Pre-test, post-test, control group
- Secondary analysis of quantitative data
- Observation
  - Use check or tally sheet
- Surveys
  - Use questionnaires

QUALITATIVE RESEARCH

- The aim of qualitative research is to "**get close to the data in their natural setting**"
- It is designed to best reflect an individual's experience in the context of their everyday life.
- It uses smaller sample sizes and digs deeply for data.

DATA COLLECTION IN QUALITATIVE RESEARCH

- Participant observation
- Case studies
- Formal and informal interviewing
- Videotaping
- Archival data surveys OR document review

- Emphasises **comprehensive**, **interdependent**, **dynamic** and **holistic** structures

- Is appropriate in the investigation of "**messy**" problems and **complex**, interdependent issues, and allows for the collection of **rich data** that can explore the "why" and "how" of the problem, and not just the "what" (quantitative research)

- Often draws on **multiple sources** of data

- Is particularly appropriate to the investigation of research problems that are under-theorised, given its strength in **generating / developing theory** (inductive).

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DATA ANALYSIS IN QUALITATIVE STUDIES

- Discourse analysis
- Narrative analysis
- Content analysis
- Thematic analysis

SAMPLING
IN QUALITATIVE RESEARCH

- Sampling is mostly purposive – with specific criteria in mind!
- Seek conceptual applicability rather than representativeness (quantitative representivity)
- You want to capture the range of views/experiences
- Or seek after/pursue saturation of data
- Or to draw theory from data.

TRIANGULATION IN QUALITATIVE RESEARCH

- Data triangulation – multiple data sources to understand a phenomenon
- Methods triangulation – multiple research methods to study a phenomenon
- Researcher triangulation – multiple investigators in analysing and interpreting the data
- Theory triangulation – multiple theories and perspectives to help interpret and explain the data