

Research Methods Workshops

Research Design

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Learning outcomes

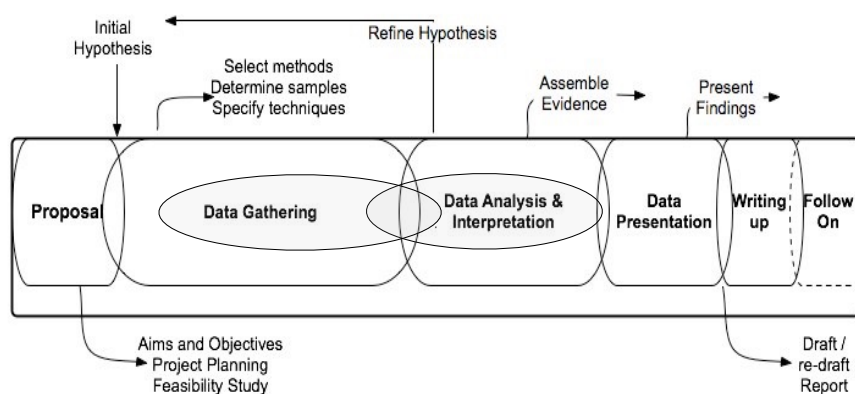
By the end of this first session, you will be able to:

- Understand where research design and data collection fit in the research process.
- Recognise the key relationships between the research question, research hypotheses and data variables.
- Complete an exercise on framing hypotheses and identifying variables for a research question.

The research process

- Identifying a a question to be answered / hypothesis to be tested / problem to be solved.
- Determining what kind of information is needed to answer that question (*ontology*).
- Determining what methods are best for generating that information (*epistemology*).
- Getting the information using the chosen methods (*data gathering*).
- Converting raw data into usable information (evidence) (*analysis & interpretation*).
- Drawing and presenting conclusions from the information (*presentation*).
- Validating the evidence provided.

Data Gathering – Where in the research process?



Ontology

- Ontology is, literally, the study of *what there is*.
- Ontological considerations in research:
 - Who you are / how do you position yourself in relation to the data sources you need?
 - Who are your data subjects? (*Sample*) What are the data items you need from them?
 - What is the relationship between you and the subjects of your research?
 - Which data units will you gather and analyse? (e.g. preferences, attitudes, decisions, experiences, processes, behaviours, values, prices, quantities, frequencies, variations . . . – in individuals or in groups)
 - Which states of another person can you observe as a researcher?
 - How much of another person's states can they describe themselves? Can you verify these?
 - Are my data sources 'representative'? How can I select a suitable sample to ensure my research data is 'typical' of a population?

Epistemology

- Epistemology is the study of knowledge – what do we know and how do we know it?
(*"episteme"* = (Classical Greek) *"acquiring knowledge"*)
- In practical research, epistemology concerns the methods we select for gathering, analysing and presenting evidence (our '*methodological framework*').
- It also concerns the tests we carry out to establish the validity and soundness of the evidence we present.

The Four Framework Approach to the Research Process

First Framework: the **conceptual framework** is contained in the research statement, question or hypotheses developed by the researcher for the research project.

Second Framework: the **theoretical framework** is contained in the literature review.

Third Framework: the **methodological framework** details how the research is conducted. It is contained in outline in the proposal, then more fully in the Methodology section of the report or dissertation.

Fourth Framework: the **analytical framework** is the structure of the detailed analysis of the data presented in the report or dissertation.

The Conceptual Framework

- The conceptual framework is set out in your relation to your research question and objectives.
- Once you have decided upon a clear and precise research question it is good discipline to think through and write down how this question (and possible answers) fits in to the framework of related concepts and theories.
- All the key concepts relevant to the research should be considered part of this framework (e.g. (an HR project): *job satisfaction, employee engagement, wage levels, staff retention / turnover, employee loyalty, . . .*)
- The sequence for developing a conceptual framework:

Secondary data → Conceptual Framework → Methodological Framework
→ Primary Data → Sample.

The Theoretical Framework

- All researchers undertake a review of the literature relevant to their research question.
- A literature review critically assesses the state of knowledge in your field and identifies gaps in or debate about that knowledge.
- A literature review provides concepts, models and theories for your conceptual framework and develops your expertise and understanding of the research domain.
- In preparing the literature review the researcher constructs the framework of theories / models / concepts to be used in their research and critically evaluates relevant alternative theories.

The Methodological Framework

- The Methodology concerns the ways in which the research is conducted. It sets out the methods for data gathering, sampling, data analysis and data validation – together with the ethical considerations and limitations of the selected methods.
- Together with the conceptual framework it sets out the philosophical approach the research adopts.
- The selection of methods has to be justified in relation to the research question and the research objectives.
- Decisions about methods are also constrained by the characteristics of the population of interest (the 'data subjects'), access to data sources and the requirements of using a fair and representative sample.
- A methodology should also address the practical issues of *how* the data will be collected (online, face-to-face, by observation, . . .) and how data will be analysed and validated (reliability, soundness).

The Analytical Framework

- The final framework concerns both the approach to analysis and the detail of which instruments / tools of analysis will be applied to (especially) the primary data.
- The framework should specify methods of analysis and why they are appropriate to the research objectives. It should explain and justify why the methods of presentation of findings are appropriate to the answer(s) being given to the initial research question.
- The framework for analysis should be guided by and linked to the conceptual and theoretical framework previously specified.
- Almost all research projects involve analysis of both qualitative and quantitative data. It is a mistake to say “I want to do qualitative research”, for example. ‘Research’ is neither qualitative nor quantitative -- these terms apply to the types of data collected – not the research.
- Even research which is based mainly on quantitative data also incorporates qualitative elements (e.g. selection of data types).

Questions, Hypotheses and Variables

- » Every good research project starts - not from a topic - but from a precise and relevant **question**. What is the question your research is intended to answer?
- » Given a precise question, the next step is to formulate hypotheses (predictions) about what answers may be possible.
- » Hypotheses (including the null hypothesis) normally assert a correlation between two or more variables - independent (IV) and dependent variables (DV).