

Lecture 5

Research Design and Methods

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The Process of Research Design

- ▶ Research and design choices
- ▶ Research and development strategies
- ▶ Project Development, Testing, Prototyping and Implementation
- ▶ Time horizons

Research Design

The research design needs

- ▶ Clear objectives derived from the research questions
- ▶ To indicate sources of data collection
- ▶ To consider constraints and ethical issues
- ▶ Valid reasons for your choice of design and development of the project

Classification of the research purpose

Exploratory research

- ▶ is a valuable means of finding out 'what is happening to seek new insights; to ask questions and to assess phenomena in a new light'.
- ▶ Useful if you wish to clarify your understanding of a problem, such as if you are unsure of precise nature of the problem.
- ▶ It may well be that time is well spent on exploratory research, as it may show that the research is not worth pursuing!

Explanatory

- ▶ There are three principal ways of conducting explanatory research:
- ▶ A search of the literature;
- ▶ Interviewing 'experts' in the subject;
- ▶ Conducting focus group interviews.

Descriptive investigations or studies

- ▶ The object of descriptive research is ‘to ‘portray an accurate profile of events or situations’ and people.
- ▶ This may be an extension of, or a forerunner to a piece of exploratory research or, more often, a piece of explanatory research.
- ▶ It is necessary to have a clear picture of the phenomena on which you wish to collect data prior to collection of data.

Explanatory research

- ▶ Studies that establish causal relationships between variables may be termed explanatory research.
- ▶ The emphasis here is on studying a situation or a problem in order to explain the relationship between variables.

Research Strategies

Experiment

Action research

Grounded theory

Survey

Ethnography

Case study

Archival research

Research Strategies

An experiment will involve

- ▶ Definition of a theoretical hypothesis
- ▶ Selection of samples from known populations
- ▶ Random allocation of samples
- ▶ Introduction of planned intervention
- ▶ Measurement on a small number of dependent variables
- ▶ Control of all other variables
- ▶ Modeling and prototyping in the case of a system development

Research Strategies

Survey: key features

- ▶ Popular in engineering management and business research problem
- ▶ Perceived as authoritative
- ▶ Allows collection of quantitative data
- ▶ Data can be analysed quantitatively
- ▶ Samples need to be representative
- ▶ Gives the researcher independence
- ▶ Structured observation and interviews can be used

Research Strategies

Case Study: key features

- ▶ Provides a rich understanding of a real life context
- ▶ Uses and triangulates multiple sources of data

A case study can be categorised in four ways
and based on two dimensions:

single case v. multiple case

holistic case v. embedded case

Yin (2003)

Research Strategies

Action research: key features

- ▶ Involves practitioners in the research and especially in the project implementation
- ▶ The researcher becomes part of the organisation
- ▶ Promotes change within the organisation
- ▶ Can have two distinct foci (Schein, 1999) – the aim of the research and the needs of the sponsor

Research Strategies

Grounded theory: key features

- ▶ Theory is built through induction and deduction
- ▶ Helps to predict and explain behaviour
- ▶ Develops theory from data generated by observations
- ▶ Is an interpretative process, not a logico-deductive one

Based on Suddaby (2006)

Research Strategies

Ethnography: key features

- ▶ Aims to describe and explain the real world by the researcher
- ▶ Takes place over an extended time period
- ▶ Realistic
- ▶ Involves extended participant observation

Research Strategies

Archival research: key features

- ▶ Uses administrative records and documents as the principal sources of data
- ▶ Allows research questions focused on the past
- ▶ Is constrained by the nature of the records and documents

Research Strategies

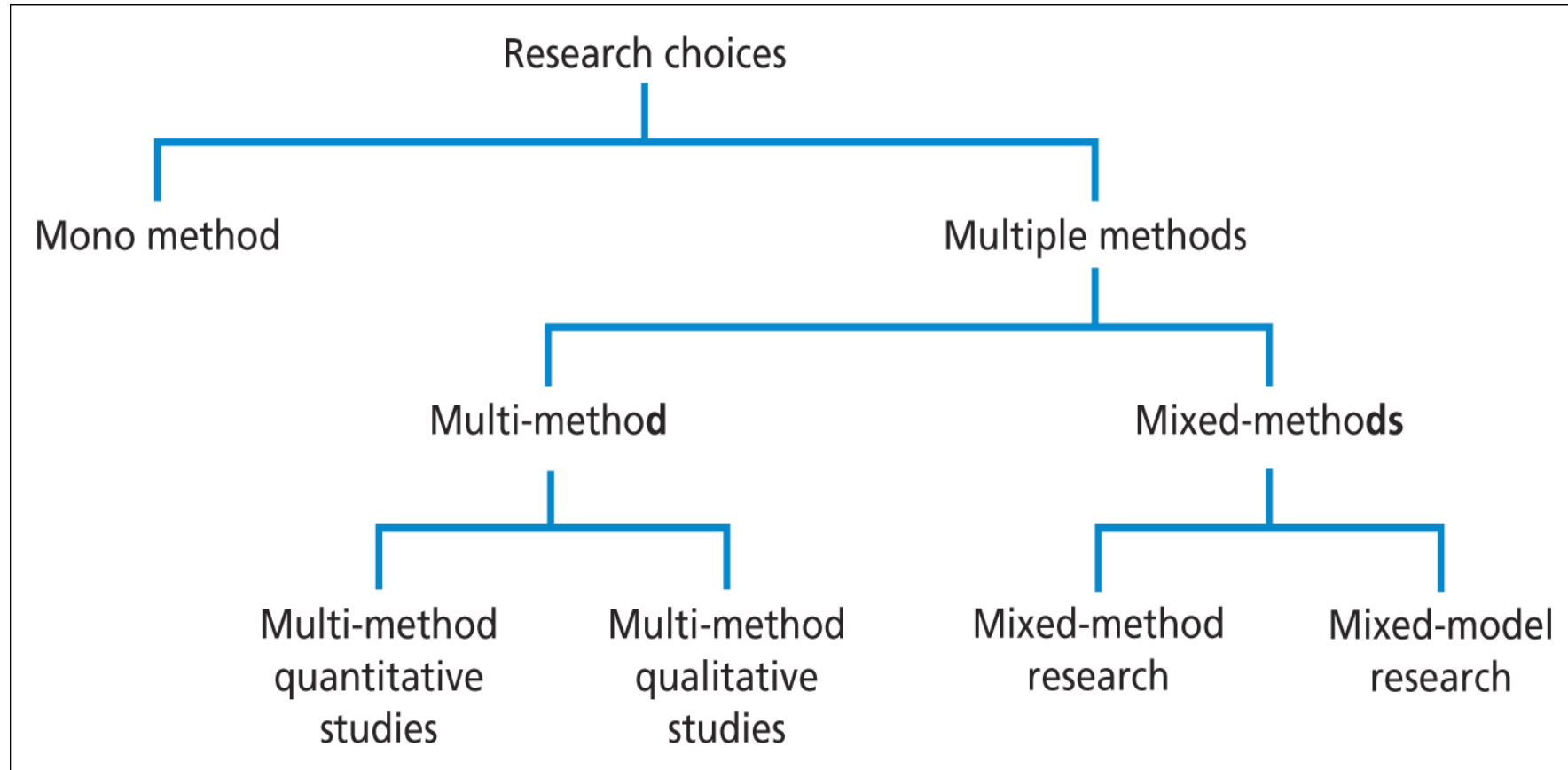
The role of the practitioner-researcher

Key features

- ▶ Research access is more easily available
- ▶ The researcher knows the organisation
- ▶ Has the disadvantage of familiarity
- ▶ The researcher is likely to their own assumptions and preconceptions
- ▶ The dual role requires careful negotiation

Multiple research methods

Research choices



Saunders *et al*, (2009)

Multiple research methods

Reasons for using mixed method designs:

- ▶ Triangulation
- ▶ Facilitation
- ▶ Complementarity
- ▶ Generality
- ▶ Support interpretation
- ▶ Study different aspects
- ▶ Solving difficult problems

Source: developed from Bryman (2006)

Time Horizons

Select the appropriate time horizon

- ▶ Cross-sectional studies
- ▶ Longitudinal studies

Credibility of research findings

Important considerations

- ▶ Reliability
- ▶ Validity
- ▶ Generalisability
- ▶ Logic leaps and false assumptions

Research design ethics

‘The research design should not subject the research population to embarrassment, harm or other material disadvantage’

Adapted from Saunders *et al*, (2009)

Summary

Research design turns a research question and objectives into a project that considers

Strategies Choices Time horizons

Research projects can be categorised as

Exploratory Descriptive Explanatory

Research projects may be

Cross-sectional Longitudinal

Summary

Important considerations

- ▶ The main research strategies may combined in the same project
- ▶ The opportunities provided by using multiple methods
- ▶ The validity and reliability of results
- ▶ Access and ethical considerations