

# The Layers of Research Design

By Mark Saunders and Paul Tosey

## Introduction

Most researchers design a piece of research to answer a question or address a problem. They begin by working out what data are needed and then focus how they will obtain these data. Obtaining these data can involve one or a number of data collection techniques such as questionnaires, interviews, and observation as well as making use of secondary data. However, selection of technique or techniques used to obtain data, along with procedures to analyse these data, represents only the final decision about the overall research design. Within this article we use the metaphor of the 'Research Onion' (\*1; p. 128) to illustrate how these final elements (the core of the research onion) need to be considered in relation to other design elements (the outer layers of the research onion). It is the researcher's understandings and associated decisions in relation to these outer layers that provide the context and boundaries within which data collection techniques and analysis procedures will be selected.

This article is concerned with the outer layers of the research onion (Fig. 1)(\*2) and the implications of these elements for the overall research design including data collection techniques and analysis procedures. However, unlike outer layers of an onion, which are simply discarded as unnecessary, explicit consideration of these elements is crucial to the development of an appropriate and coherent research design which can be both justified and explained. Within this article we start at the outermost layer offering an overview of different research philosophies and their implications for the research design. We then peel back each of the subsequent layers considering the implications of methodological choice, strategy(ies) and the time horizon for design. We conclude by emphasising the importance of the coherence in research design.

See FIG 1

## Research philosophy

How a researcher views the world, her or his taken-for-granted assumptions about human knowledge and about the nature of the realities encountered, inevitably shape how a research question is understood and the associated research design. The main influence on this, a researcher's

philosophy, is her or his personal view of what constitutes acceptable knowledge and the process by which this is developed. A researcher who is concerned with observable phenomena, such as the resources needed in a manufacturing process, is likely to have a very different view on the way research should be conducted from one concerned with understanding the subjective meanings of the feelings and attitudes of the workers in that same manufacturing process. Not only will their methodological choice and strategies differ considerably, but so will their views on what data are important and, perhaps more significantly, what are useful.

A researcher who is concerned with observing and predicting outcomes is, like a laboratory scientist, concerned with law-like generalisations such as cause and effect; reflecting the philosophy of *positivism*. She or he adopts what is often referred to as 'scientific method' to propose and test theories with data which are highly structured and usually measurable and in which the research is not influenced by the researcher's values. This usually involves large samples of quantitative data and statistical hypothesis testing. Where a theory is not confirmed by findings (based on the analysis of these data) there is a need to revise the theory.

Like positivism, *realism* is a philosophical position associated with scientific enquiry. Realism states that reality exists independent of the mind and that what a researcher's senses show her or him is the truth, although the researcher is influenced by world views and their own experiences. Philosophers distinguish between two forms of realism: direct realism and critical realism. A researcher reflecting a direct realist position argues that what is experienced through our senses provides an accurate representation. In contrast, a researcher reflecting a critical realist position argues that what is initially experienced through senses is

subsequently processed subjectively by the mind. For the critical realist researcher this means that there is a need to find out both what is immediately experienced and the structures and relationships that lie beneath this; in other words to consider the underlying complexity. Consequently, collection techniques and analysis procedures are varied utilising either or both quantitative and qualitative data.

Where the researcher is more concerned with gathering rich insights into subjective meanings than providing law-like generalisations, she or he is more likely to reflect the philosophy of *interpretivism*. This philosophy relates to the study of social phenomena in their natural environment. It focuses upon conducting research amongst people rather than upon objects, adopting an empathetic stance so as to understand their social world and the meaning they give to it from their point of view. Unlike the positivist, the interpretivist researcher considers research is value bound, what is being researched being a function of a particular set of circumstances and individuals at a specific time. Data collection and analysis are, therefore, likely to involve qualitative data from in-depth investigations with small samples.

For researchers who adopt the philosophy of *pragmatism*, the importance of research is in the findings' practical consequences. They consider that no single viewpoint can ever give the entire picture and that there may be multiple realities. This does not mean that a pragmatist researcher would always use a variety of data collection techniques and analysis procedures; rather the research design should enable credible, reliable and relevant data to be collected that support subsequent action.

## Methodological choice

This layer of the research onion highlights a basic but important choice all researchers face when designing their research: whether to use a quantitative method or methods, a qualitative method or methods, or a mixture of both? Researchers can choose to use a single data collection technique and corresponding analysis procedure, either a *mono method* quantitative design (for example, data collected using a questionnaire, analysed

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statistically) or a *mono method qualitative* design (for example, data collected through in depth interviews, analysed as narratives). Alternatively, they can use multiple methods. In *multimethod quantitative* designs the researcher uses more than one quantitative data collection technique (for example, a questionnaire and structured observation) with associated statistical analysis procedures. For *multimethod qualitative* designs she or he uses more than one qualitative data collection technique (for example, in-depth interviews and diary accounts) are used with associated analysis procedures. A *mixed methods* design combines both qualitative and quantitative data collection techniques and analysis procedures. This means the researcher could start with a qualitative data collection and analysis (for example, a series of focus groups to help determine the breadth of possible factors) and follow this with quantitative data collection and analysis (for example, a questionnaire to determine the relative frequency of these different factors); a *mixed method simple* design. Alternatively, they could choose to use quantitative analysis techniques to analyse qualitative data quantitatively (for example comparing statistically the frequency of occurrence of different concepts in in-depth interview transcripts between different groups) or vice versa; a *mixed method complex* design.

### Strategy(ies)

Peeling away the methodological choice reveals the next layer of the onion: strategy(ies). This layer's label emphasises immediately that researchers can use one or more strategies within their research design as they plan how to go about answering a research questions or addressing a research question. A researcher may adopt an *action research* strategy by working with practitioners to bring about organisational change within which she also adopts a *survey* strategy to collect data in a structured form from a sizeable number of employees. Whilst it is not possible to describe or discuss all

the strategies in Fig. 1 within the confines of this article (see (\*1) for further detail), it is important to note that, although in some cases researchers associate particular research strategies with particular research philosophies, the boundaries between them are often permeable. *Ethnography*, for example, is associated with both realism and interpretivism. Conversely, whilst both the *experiment* and the *survey* research strategies are normally associated with positivism, they are also used by realist and pragmatist researchers. Similarly, whilst a *case study*, perhaps of an individual organisation, is often associated with interpretivism, case studies are also used in positivistic research.

### Time horizon

The final layer of the research onion, before reaching the core, highlights the time horizon over which the researcher undertakes the research. Where research is undertaken to answer a question or address a problem at a particular time this

'snapshot' is *cross-sectional* and is likely to make use of strategies such as a survey or case study. Conversely, where answering the question or addressing the problem necessitates data being collected for an extended period of time, the research is *longitudinal*, being likely to make particular use of strategies such as an experiment, action research, grounded theory and archival research.

### Concluding remarks

Designing research to answer a question or address a problem is invariably constrained both by what is practicable and, of equal importance, what is ethical. Within this article we have highlighted how, within the design, an understanding of outer layers of research philosophy, possible methodological choices, strategies and the time horizon and their inter-relationships is important. These help ensure that the core of data collection techniques and analysis procedures used in the research undertaken are both appropriate and coherent. ■

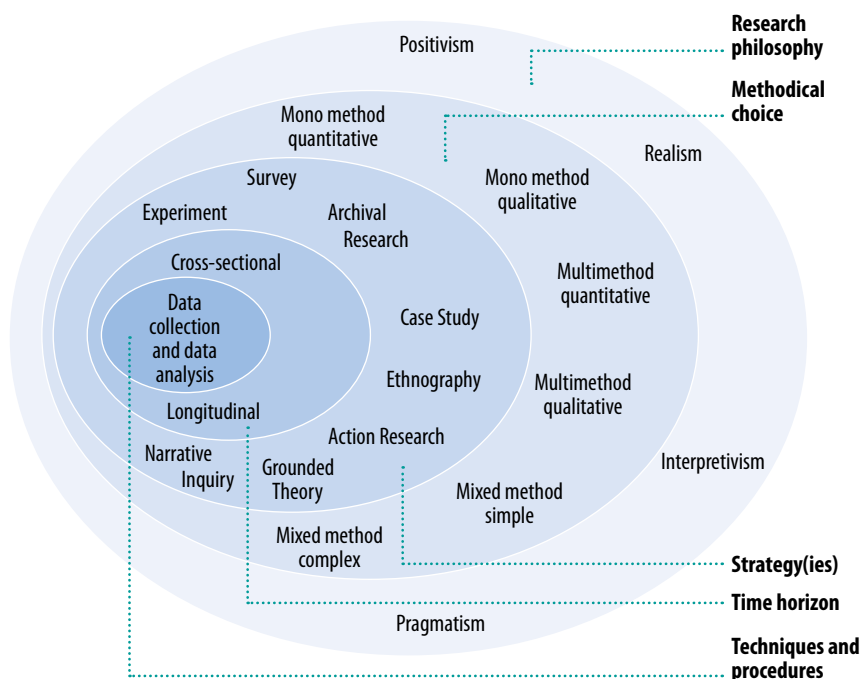


Fig. 1: The research onion

Source: ©Mark Saunders, Philip Lewis and Adrian Thornhill (2011), adapted with permission

### REFERENCES:

- (\*1) Saunders, M, Lewis, P and Thornhill, A (2012) *Research Methods for Business Students*, 6th edition, Pearson.
- (\*2) For the purposes of this short article we have omitted the layer labelled 'Approach', comprising deduction, induction and abduction, that appears in the original diagram. For a discussion of this layer see (\*1) pp. 143–9.

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