

4.5 Approaches to theory development

We emphasised that your research project will involve the use of theory (Chapter 2). That theory may or may not be made explicit in the design of the research (Chapter 5), although it will usually be made explicit in your presentation of the findings and conclusions. The extent to which your research is concerned with theory testing or theory building raises an important question regarding the design of your research project. This is often portrayed as two contrasting approaches to the reasoning you adopt: deductive or inductive; although as we highlight in Table 4.4 reasoning can, alternatively, be abductive. Deductive reasoning occurs when the conclusion is derived logically from a set of theory-derived premises, the conclusion being true when all the premises are true (Ketokivi and Mantere 2010). For example, our research may concern likely online retail sales of a soon-to-be-launched new mobile phone. We form three premises:

- that online retailers have been allocated limited stock of the new mobile phones by the manufacturer;
- that customers' demand for the phones exceeds supply;
- that online retailers allow customers to pre-order the phones.

If these premises are true we can deduce that the conclusion that online retailers will have 'sold' their entire allocation of the new mobile phone by the release day will also be true.

In contrast, in inductive reasoning there is a gap in the logic argument between the conclusion and the premises observed, the conclusion being 'judged' to be supported by the observations made (Ketokivi and Mantere 2010). Returning to our example of the likely online retail sales of a soon-to-be-launched mobile phone, we would start with observations about the forthcoming launch. Our observed premises would be:

- that news media are reporting that online retailers are complaining about only being allocated limited stock of the new mobile phone by manufacturers;
- that news media are reporting that demand for the phones will exceed supply;
- that online retailers are allowing customers to pre-order the phones.

Based on these observations, we have good reason to believe online retailers will have 'sold' their entire allocation of the new mobile phone by the release day. However, although our conclusion is supported by our observations, it is not guaranteed. In the past, manufacturers have launched new phones which have had underwhelming sales (Mangalindan 2014).

There is also a third approach to theory development that is just as common in research, abductive reasoning, which begins with a 'surprising fact' being observed (Ketokivi and Mantere 2010). This surprising fact is the conclusion rather than a premise. Based on this conclusion, a set of possible premises is determined that is considered sufficient or nearly sufficient to explain the conclusion. It is reasoned that, if this set of premises were true, then the conclusion would be true as a matter of course. Because the set of premises is sufficient (or nearly sufficient) to generate the conclusion, this provides reason to believe that it is also true. Returning once again to our example of the likely online retail sales of a soon-to-be-launched new mobile phone, a surprising fact (conclusion) might be that online retailers are reported in the news media as stating they will have no remaining stock of the new mobile phone for sale on the day of its release. However, if the online retailers are allowing customers to pre-order the mobile phone prior to its release then it would not be surprising if these retailers had already sold their allocation of phones. Therefore, using abductive reasoning, the possibility that online retailers have no remaining stock on the day of release is reasonable.

Building on these three approaches to theory development (Figure 4.1), if your research starts with theory, often developed from your reading of the academic literature, and you design a research strategy to test the theory, you are using a **deductive approach** (Table 4.4). Conversely, if your research starts by collecting data to explore a phenomenon and you generate or build theory (often in the form of a conceptual framework), then you are using an **inductive approach** (Table 4.4). Where you are collecting data to explore a phenomenon, identify themes and explain patterns, to generate a new or modify an existing theory which you subsequently test through additional data collection, you are using an **abductive approach** (Table 4.4).

The next three sub-sections explore the differences and similarities between these three approaches and their implications for your research.

Deduction

As noted earlier, deduction owes much to what we would think of as scientific research. It involves the development of a theory that is then subjected to a rigorous test through a series of propositions. As such, it is the dominant research approach in the natural sciences, where laws present the basis of explanation, allow the anticipation of phenomena, predict their occurrence and therefore permit them to be controlled.

Blaikie (2010) lists six sequential steps through which a deductive approach will progress:

- 1 Put forward a tentative idea, a premise, a hypothesis (a testable proposition about the relationship between two or more concepts or variables) or set of hypotheses to form a theory.

Table 4.4 Deduction, induction and abduction: from reason to research

	Deduction	Induction	Abduction
Logic	In a deductive inference, when the premises are true, the conclusion must also be true	In an inductive inference, known premises are used to generate untested conclusions	In an abductive inference, known premises are used to generate testable conclusions
Generalisability	Generalising from the general to the specific	Generalising from the specific to the general	Generalising from the interactions between the specific and the general
Use of data	Data collection is used to evaluate propositions or hypotheses related to an existing theory	Data collection is used to explore a phenomenon, identify themes and patterns and create a conceptual framework	Data collection is used to explore a phenomenon, identify themes and patterns, locate these in a conceptual framework and test this through subsequent data collection and so forth
Theory	Theory falsification or verification	Theory generation and building	Theory generation or modification; incorporating existing theory where appropriate, to build new theory or modify existing theory

- 2 By using existing literature, or by specifying the conditions under which the theory is expected to hold, deduce a testable proposition or number of propositions.
- 3 Examine the premises and the logic of the argument that produced them, comparing this argument with existing theories to see if it offers an advance in understanding. If it does, then continue.
- 4 Test the premises by collecting appropriate data to measure the concepts or variables and analysing them.
- 5 If the results of the analysis are not consistent with the premises (the tests fail!), the theory is false and must either be rejected or modified and the process restarted.
- 6 If the results of the analysis are consistent with the premises then the theory is corroborated.

Deduction possesses several important characteristics. First, there is the search to explain causal relationships between concepts and variables. It may be that you wish to establish the reasons for high employee absenteeism in a retail store. After reading about absence patterns in the academic literature you develop a theory that there is a relationship between absence, the age of workers and length of service. Consequently, you develop a number of hypotheses, including one which states that absenteeism is significantly more likely to be prevalent among younger workers and another which states that absenteeism is significantly more likely to be prevalent among workers who have been employed by the organisation for a relatively short period of time. To test this proposition you collect quantitative data. (This is not to say that a deductive approach may not use qualitative data.) It may be that there are important differences in the way work is arranged in different stores: therefore you would need to specify precisely the conditions under which your theory is likely to hold and collect appropriate data within these conditions. By doing this you would help to ensure that any change in absenteeism was a function of worker age and length of service rather than any other aspect of the store, for example the way in which people were managed. Your research would use a highly **structured methodology** to facilitate replication, an important issue to ensure reliability, as we emphasise in Section 5.11.

An additional important characteristic of deduction is that concepts need to be **operationalised** in a way that enables facts to be measured, often quantitatively. In our example, one variable that needs to be measured is absenteeism. Just what constitutes absenteeism would have to be strictly defined: an absence for a complete day would probably count, but what about absence for two hours? In addition, what would constitute a 'short period of employment' and 'younger' employees? What is happening here is that the principle of **reductionism** is being followed. This holds that problems as a whole are better understood if they are reduced to the simplest possible elements.

The final characteristic of deduction is **generalisation**. In order to be able to generalise it is necessary to select our sample carefully and for it to be of sufficient size (Sections 7.2 and 7.3). In our example above, research at a particular store would allow us only to make inferences about that store; it would be dangerous to predict that worker youth and short length of service lead to absenteeism in all cases. This is discussed in more detail in Section 5.11.

As a scientific approach that emphasises structure, quantification, generalisability and testable hypotheses, the deductive approach is most likely to be underpinned by the positivist research philosophy.

Induction

An alternative approach to developing theory on retail store employee absenteeism would be to start by interviewing a sample of the employees and their line managers about the experience of working at the store. The purpose here would be to get a feel of what was

going on, so as to understand better the nature of the problem. Your task then would be to make sense of the interview data you collected through your analysis. The result of this analysis would be the formulation of a theory, often expressed as a conceptual framework. This may be that there is a relationship between absence and the length of time a person has worked for the retail store. Alternatively, you may discover that there are other competing reasons for absence that may or may not be related to worker age or length of service. You may end up with the same theory, but your reasoning to produce that theory is using an inductive approach: theory follows data rather than vice versa, as with deduction.

We noted earlier that deduction has its origins in research in the natural sciences. However, the emergence of the social sciences in the twentieth century led social science researchers to be wary of deduction. They were critical of a reasoning approach that enabled a cause–effect link to be made between particular variables without an understanding of the way in which humans interpreted their social world. Developing such an understanding is, of course, the strength of an inductive approach. In our absenteeism example, if you were adopting an inductive approach you would argue that it is more realistic to treat workers as humans whose attendance behaviour is a consequence of the way in which they perceive their work experience, rather than as if they were unthinking research objects who respond in a mechanistic way to certain circumstances.

Followers of induction would also criticise deduction because of its tendency to construct a rigid methodology that does not permit alternative explanations of what is going on. In that sense, there is an air of finality about the choice of theory and definition of the hypothesis. Alternative theories may be suggested by deduction. However, these would be within the limits set by the highly structured research design. In this respect, a significant characteristic of the absenteeism research design noted above is that of the operationalisation of concepts. As we saw in the absenteeism example, age was precisely defined. However, a less structured approach might reveal alternative explanations of the absenteeism–age relationship denied by a stricter definition of age.

Research using an inductive approach to reasoning is likely to be particularly concerned with the context in which such events take place. Therefore, the study of a small sample of subjects might be more appropriate than a large number as with the deductive approach. Researchers in this tradition are more likely to work with qualitative data and to use a variety of methods to collect these data in order to establish different views of phenomena (as will be seen in Chapter 10).

Due to its connection to humanities and its emphasis on the importance of subjective interpretations, the inductive approach is most likely to be informed by the interpretivist philosophy.

Abduction

Instead of moving from theory to data (as in deduction) or data to theory (as in induction), an abductive approach moves back and forth, in effect combining deduction and induction (Suddaby 2006). This, as we have noted earlier, matches what many business and management researchers actually do. Abduction begins with the observation of a ‘surprising fact’; it then works out a plausible theory of how this could have occurred. Van Maanen et al. (2007) note that some plausible theories can account for what is observed better than others and it is these theories that will help uncover more ‘surprising facts’. These surprises, they argue, can occur at any stage in the research process, including when writing your project report! Van Maanen et al. also stress that deduction and induction complement abduction as logics for testing plausible theories.



Box 4.7 Focus on management research

Developing empirical knowledge and theory abductively

In their paper on the working lives of Critical Management Studies (CMS), early-career academics, Bristow and colleagues (2017) analyse 24 semi-structured interviews with participants working in UK business schools. The dual purpose of their research is to, firstly, add to the empirical understanding of their participants' predicament as they navigate the tensions between business schools' pressures and their personal CMS commitments, and, secondly, to contribute to the dialectical theory of organisational resistance and compliance. As this dual purpose required repeated oscillation between theory and data, their approach is abductive, combining both inductive and deductive elements.

The authors' starting point was a surprising fact – their own and their participants' experiences of starting their first academic jobs, which were different from what was described in the existing literature on early career academics. Bristow et al. believed that the dialectical approach to resistance and compliance could help to better explore the complexities of the early-career experiences, so they used the theory to design broad interview questions. However, they also wanted to capture their participants' own understandings of themselves as resisters and compliers, so in the interviews the pre-prepared questions were used as a loose guide rather than a rigid structure, and interviewees were encouraged to talk at length about each subject. In this way, themes and issues were enabled to emerge in the interviews inductively.

Following the interviews, the authors collectively negotiated the inductively derived themes and issues, and mapped them against the pre-prepared theoretical framework, changing and modifying the latter in the process. This enabled them to make a theoretical as well as an empirical contribution.

Applying an abductive approach to our research on the reasons for high employee absenteeism in a retail store would mean obtaining data that were sufficiently detailed and rich to allow us to explore the phenomenon and identify and explain themes and patterns regarding employee absenteeism. We would then try to integrate these explanations in an overall conceptual framework, thereby building up a theory of employee absenteeism in a retail store. This we would test using evidence provided by existing data and new data and revise as necessary (Box 4.7).

Due to the flexibility of the abductive approach, it can be used by researchers from within a number of different research philosophies. In fact, some would argue that because pure deduction or pure induction are so difficult (or even impossible) to achieve, most management researchers in practice use at least some element of abduction. However, a well-developed abductive approach is most likely to be underpinned by pragmatism or postmodernism, and can also be underpinned by critical realism.

The abductive approach is sometimes called 'retroduction'. In fact, **retroduction** is believed to be the original label for what has become known as abduction through corrupt translation and misunderstanding of older philosophical texts (Peirce 1896). Apart from this trivia, the notion 'retroduction' may be important to you as a researcher if your chosen research philosophy is critical realism. Critical realists often choose to describe their approach as retroductive in order to emphasise the historical aspect of their research, where they would start with a surprising phenomenon in the present and move backwards in time in order to identify the underlying mechanisms and structures that might have produced it (Reed 2005).

Choosing an approach to theory development

At this stage you may be asking yourself: So what? Why is the choice that I make about my approach to theory development so important? Easterby-Smith et al. (2012) suggest three reasons. First, it enables you to take a more informed decision about your research design (Chapter 5), which is more than just the techniques by which data are collected and procedures by which they are analysed. It is the overall configuration of a piece of research involving questions about what kind of evidence is gathered and from where, and how such evidence is interpreted in order to provide good answers to your initial research question.

Second, it will help you to think about those research strategies and methodological choice that will work for you and, crucially, those that will not. For example, if you are particularly interested in understanding why something is happening, rather than being able to describe what is happening, it may be more appropriate to undertake your research inductively rather than deductively.

Third, Easterby-Smith et al. (2012) argue that knowledge of the different research traditions enables you to adapt your research design to cater for constraints. These may be practical, involving, say, limited access to data, or they may arise from a lack of prior knowledge of the subject. You simply may not be in a position to frame a hypothesis because you have insufficient understanding of the topic to do this.

So far, when discussing induction and deduction we have conveyed the impression that there are rigid divisions between deduction and induction. This would be misleading. As we have seen in our discussion of abduction, it is possible to combine deduction and induction within the same piece of research. It is also, in our experience, often advantageous to do so, although often one approach or another is dominant.

At this point you may be wondering whether your reasoning will be predominantly deductive, inductive or abductive. The honest answer is, 'it depends'. In particular, it depends on your research philosophy, the emphasis of the research (Box 4.8) and the nature of the research topic. Different philosophies tend to lead researchers to different approaches: so positivists tend to deduction, interpretivists to induction, and postmodernists, pragmatists and critical realists to abduction (although critical realists would often call their approach 'retroduction'). A topic on which there is a wealth of literature from which you can define a theoretical framework and a hypothesis lends itself more readily to deduction. With research into a topic that is new, is exciting much debate and on which there is little existing literature, it may be more appropriate to work inductively by generating data and analysing and reflecting upon what theoretical themes the data are suggesting. Alternatively, a topic about which there is a wealth of information in one context but far less in the context in which you are researching may lend itself to an abductive approach, enabling you to modify an existing theory.

The time you have available will be an issue. Deductive research can be quicker to complete, albeit that time must be devoted to setting up the study prior to data collection and analysis. Data collection is often based on 'one take'. It is normally possible to predict the time schedules accurately. On the other hand, abductive and, particularly, inductive research can be much more protracted. Often the ideas, based on a much longer period of data collection and analysis, have to emerge gradually. This leads to another important consideration, the extent to which you are prepared to indulge in risk. Deduction can be a lower-risk strategy, although there are risks, such as the non-return of questionnaires. With induction and abduction you have to live with the fear that no useful data patterns and theory will emerge. Finally, there is the question of audience. In our experience, most managers are familiar with deduction and much more likely to put faith in the conclusions



Box 4.8 Focus on student research

Deductive, inductive and abductive research

Sadie decided to conduct a research project on violence at work and its effects on the stress levels of staff. She considered the different ways she would approach the work were she to adopt:

- the deductive approach;
- the inductive approach;
- the abductive approach.

If she adopted a deductive approach to her reasoning, she would have to:

- 1 start with the hypothesis that staff working directly with the public are more likely to experience the threat or reality of violence and resultant stress;
- 2 decide to research a population in which she would have expected to find evidence of violence, for example, a sizeable social security office;
- 3 administer a questionnaire to a large sample of staff in order to establish the extent of violence

(either actually experienced or threatened) and the levels of stress experienced by them;

- 4 be particularly careful about how she defined violence;
- 5 standardise the stress responses of the staff, for example, days off sick or sessions with a counsellor.

If she adopted an inductive approach then she might have decided to interview some staff who had been subjected to violence at work. She might have been interested in their feelings about the events that they had experienced, how they coped with the problems they experienced and their views about the possible causes of the violence.

If she adopted an abductive approach, she might have developed a conceptual model on the basis of her interview. She might then have used this model to develop a series of hypotheses and designed a questionnaire to collect data with which to test these hypotheses. Based on analyses of these data she might then have refined her conceptual model.

All approaches would have yielded valuable data about this problem (indeed, within this abductive approach, both inductive and deductive approaches were used at different stages). No approach should be thought of as better than the others. They are better at different things. It depends where her research emphasis lies.

emanating from this approach. You may also wish to consider the preferences of the person marking your research report. We all have our preferences about the approach to adopt.

This last point suggests that not all your decisions about the approach to reasoning should always be practically based. Hakim (2000) uses an architectural metaphor to illustrate this. She introduces the notion of the researcher's preferred style, which, rather like the architect's, may reflect 'the architect's own preferences and ideas . . . and the stylistic preferences of those who pay for the work and have to live with the final result' (Hakim 2000: 1). This echoes the feelings of Buchanan et al. (2013: 59), who argue that 'needs, interests and preferences (of the researcher) . . . are typically overlooked but are central to the progress of fieldwork'. However, a note of caution. Whilst researchers often refine their research questions as the research progresses, it is important that your preferences do not lead to you changing completely the essence of the research question, if only because you only have a limited amount of time to complete your research project. Ensuring that the essence of the research question does not change is particularly important if it has been defined by an organisation, for example, as a consultancy project they wish you to undertake.